BOX NO. 1841

ANDERSON – COYOTE
DAM BREAK INUNDATION STUDY

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SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CRC Date 8-73 Chkd. By _____ Date _____ Sheet No. 1 of _____

Subject Coyote and Anderson Dam Failure Job No. _____

	Anderson Dam & Res	Coyote Dam & Res
Creek.	Coyote	Coyote
Year Constructed	1950	1936
Res. Capacity	91,280 AF	23,700 AF
Type of Dam	Rolled Earth & Rock	Rolled Earth & Rock
Dam height (ft.)	240	120
Dam Crest length (ft)	1385	970
" " Elev (ft)	640	802
" " width (ft)	40	100
" Base "	1100	945
Outlet pipe size (inches)	49	50
Spillway Crest Elev (ft)	625	777
" " length (ft)	191	110
" Capacity (cfs)	24,000	53,000
Freeboard (ft)	15	25
Res. Length (Miles)	7.8	4.8

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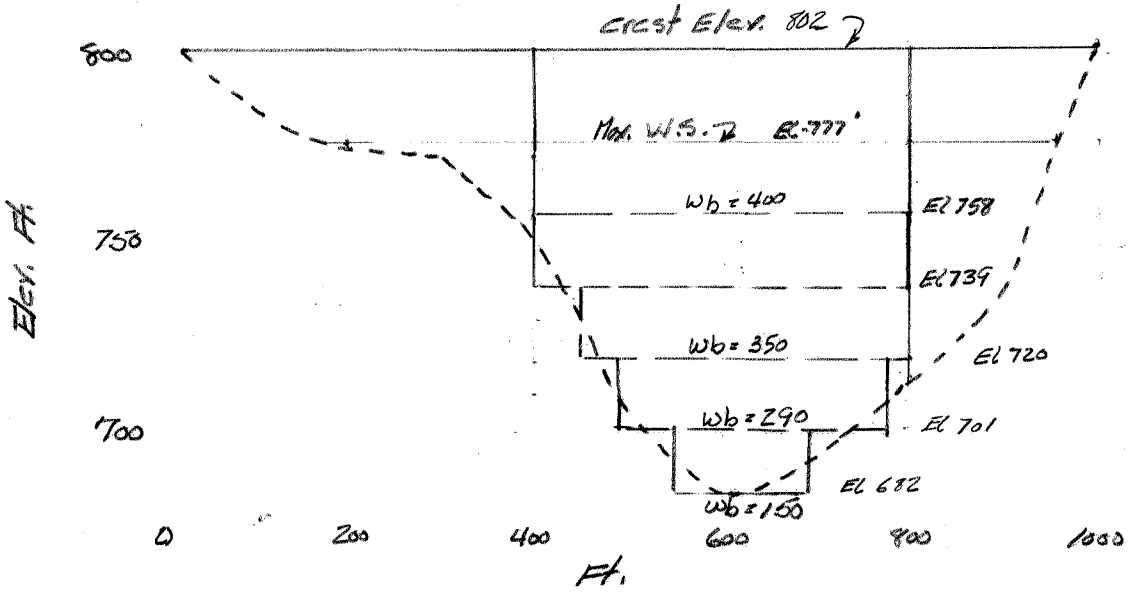
Subject Coyote & Anderson Dam Failure Job No. _____

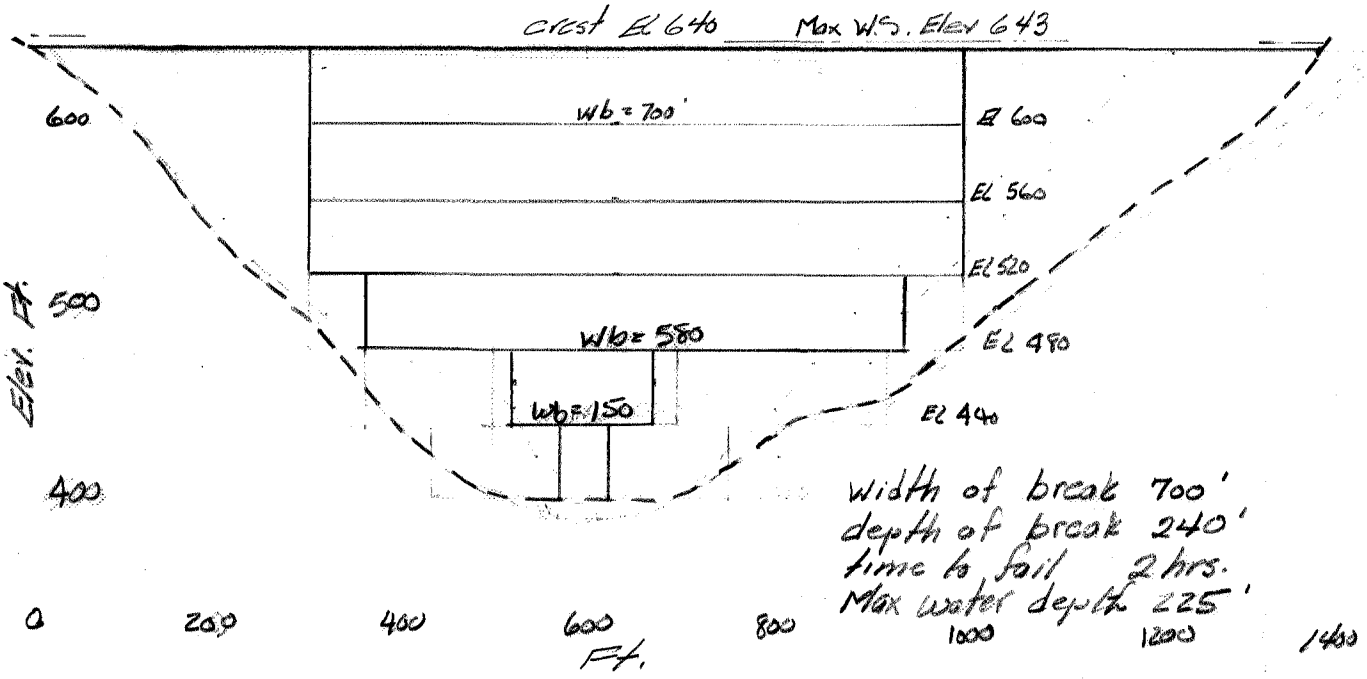
Dam break Criteria

Coyote Dam.

Width of break 400'
depth of break 120'
time to fail 1 hr. - 40 Min.
Max water depth 95'



Anderson Dam



Width of break 700'
depth of break 240'
time to fail 2 hrs.
Max water depth 225'

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Subject Coyote - Anderson Dam Failure Job No. _____

$$\text{Max } Q = 8/27 \sqrt{g}\, W_b\, d^{3/2} \left[\frac{W_d}{W_b} \times \frac{Y_o}{d} \right]^{.28}$$

W_d = width of dam of initial water surface
W_b = width of break
Y_o = total water depth
d = initial water surface to bottom of break.
g = 32.

critical time

$$t_c = 2L / C_o$$

L = Length of Reservoir
$C_o = \sqrt{gy}$ = wave velocity.
y = Average depth of water in Reservoir

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Subject Coyote - Anderson Dam Failure Job No. ____

Outflow Hydrograph - Coyote Dam

Assume 5 breaks - 20 minutes between breaks
break width 400' Total time 5 × 20 = 100 Min
Assume break starts when water surface is at Spillway Crest

$$Q = 8/27\sqrt{9} \times W_b d^{3/2}\left[\frac{W_d}{W_b} \times \frac{Y_o}{d}\right]^{.28} = 1.68 \times W_b d^{3/2}\left[\frac{W_d}{W_b} \times \frac{Y_o}{d}\right]^{.28}$$

Initial break

T = 20 Min
d = 95/5 = 19.0 Total depth of initial break = 34'

$$Q = 1.68 \times 400 \times 19^{3/2}\left[\frac{790}{400} \times \frac{95}{19}\right]^{.28} = 55{,}640(9.87)^{.28}$$

Q = 105,700 cfs.

$$t_c = 2 \times 25{,}300 / \sqrt{32 \times 48} = 50{,}600/39.2 = 1291 \text{ Sec} \quad 21.5 \text{ Min}$$

Vol. = 20 × 60 × 105,700 / 43560 = 2910 AF
Vol remaining in Storage = 23,700 - 2910 = 20,790 AF
W.S. Elev. = 772' Change in W.S. 777 - 772 = 5'

2nd break

T = 20 Min W.S. Elev 772
d = 772 - [777 - 2(19)] = 33' Y_o = 90'

$$Q = 1.68 \times 400 \times 33^{3/2}\left[\frac{650}{400} \times \frac{90}{19}\right]^{.28} = 127{,}000\left[7.70\right]^{.28}$$

Q = 224,800 cfs

$$t_c = 2 \times 25{,}000 / \sqrt{32 \times 45} = 1335 \text{ Sec} \quad 22 \text{ Min}$$

Vol = 20 × 60 × 224,800 / 43560 = 6190 AF

Vol remaining in Storage = 20,790 - 6190 = 14,600 AF

W.S. Elev 760 Total Change in W.S. = 777 - 760 = 17'

3rd Break

T = 20 Min W.S. Elev. 760

$d = 760 - [777 - 3(9)] = 40$ $y_o = 78'$

$Q = 1.68 \times 375 \times 40^{3/2} \left[\frac{570}{375} \quad \frac{78}{40} \right]^{.28} = 159,400[2.96]^{.28} = 159,400(1.35)$

Q = 215,200 cfs.

$t_c > 20$ Min $t_c = 2 \times 23,500 / \sqrt{32 \times 39} = 22$ Min

Vol = $20 \times 60 \times 215,200 / 43560 = 5940$ AF

Vol. remaining in storage = 14,600 - 5940 = 8660

W.S. Elev. 747 Total Change in W.S. 777-747 = 30'

4th Break

T = 20 Min W.S. Elev 748'

$d = 747 - [777 - 4(19)] = 46'$ $y_o = 65'$

$Q = 1.68 \times 320 \times 46^{3/2} \left[\frac{510}{320} \times \frac{65}{46} \right]^{.28} = 167,700(2.25)^{.28} = 167,700 \times 1.25$

Q = 209,600 cfs.

$t_c = 2 \times 16900 / \sqrt{32 \times 32} = 18$ Min

Vol. = $20 \times 60 \times 209,600 / 43,560 = 5770$ AF

Vol remaining in Storage = 8660 - 5770 = 2890 AF

W.S. Elev. 727 Total change in W.S. = 777 - 727 = 50'

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5 Th Break

T = 20 Min W.S. Elev. 727

$d = 727 - [777 - 5(19)] = 45'$ $Y_o = 45'$

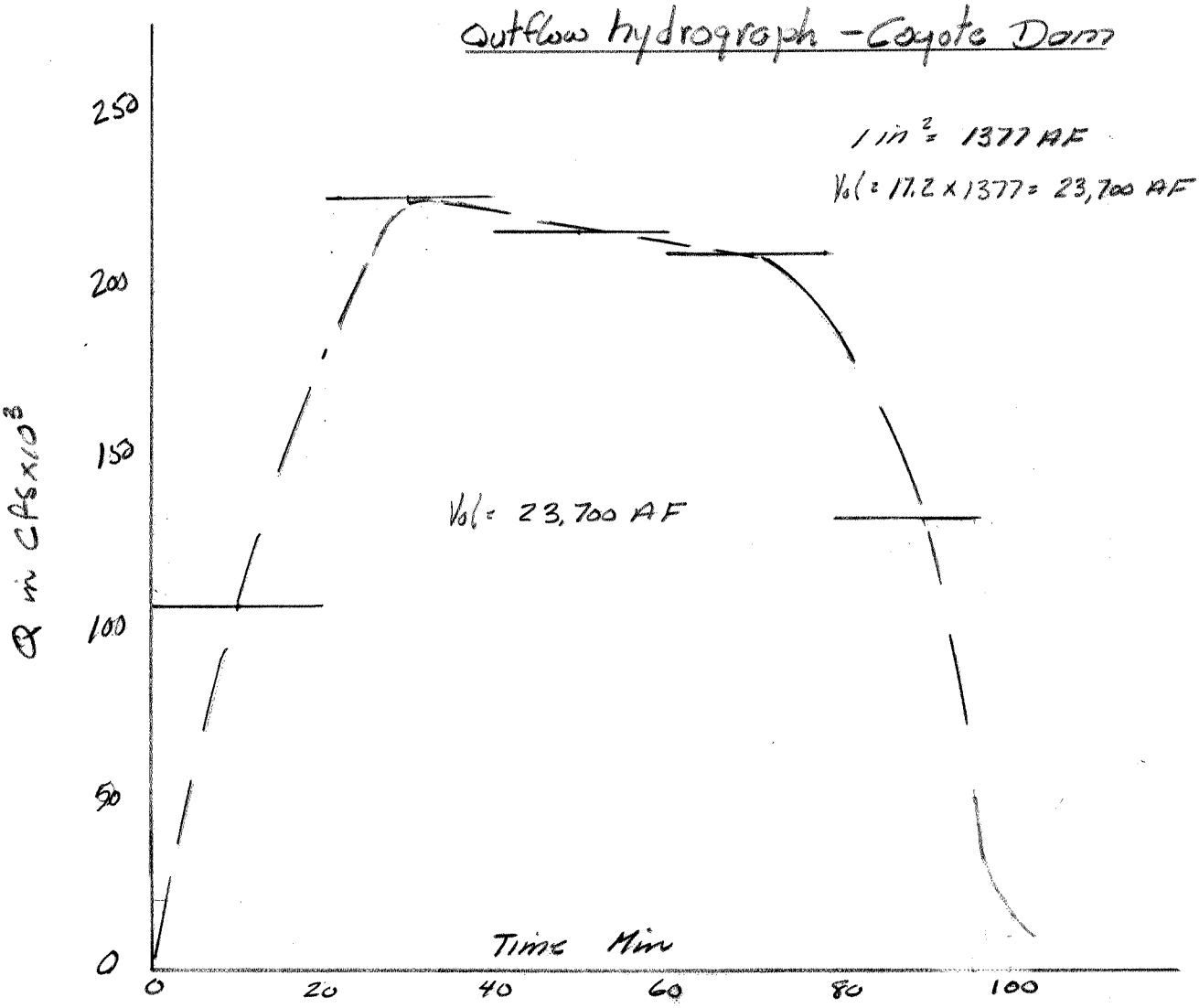
$Q = 1.68 \times 220 \times 45^{3/2} \left[\frac{400}{220} \times \frac{45}{45}\right]^{.28} = 111,600 [1.82]^{.28} = 111,600 \times 1.18$

$Q = 131,700$ cfs.

$t_c = 2 \times 13,300 / \sqrt{32 \times 23} = 16$ Min

$t = 2890 \times 43560 / 60 \times 131,700 = 16$ Min

Outflow hydrograph - Coyote Dam



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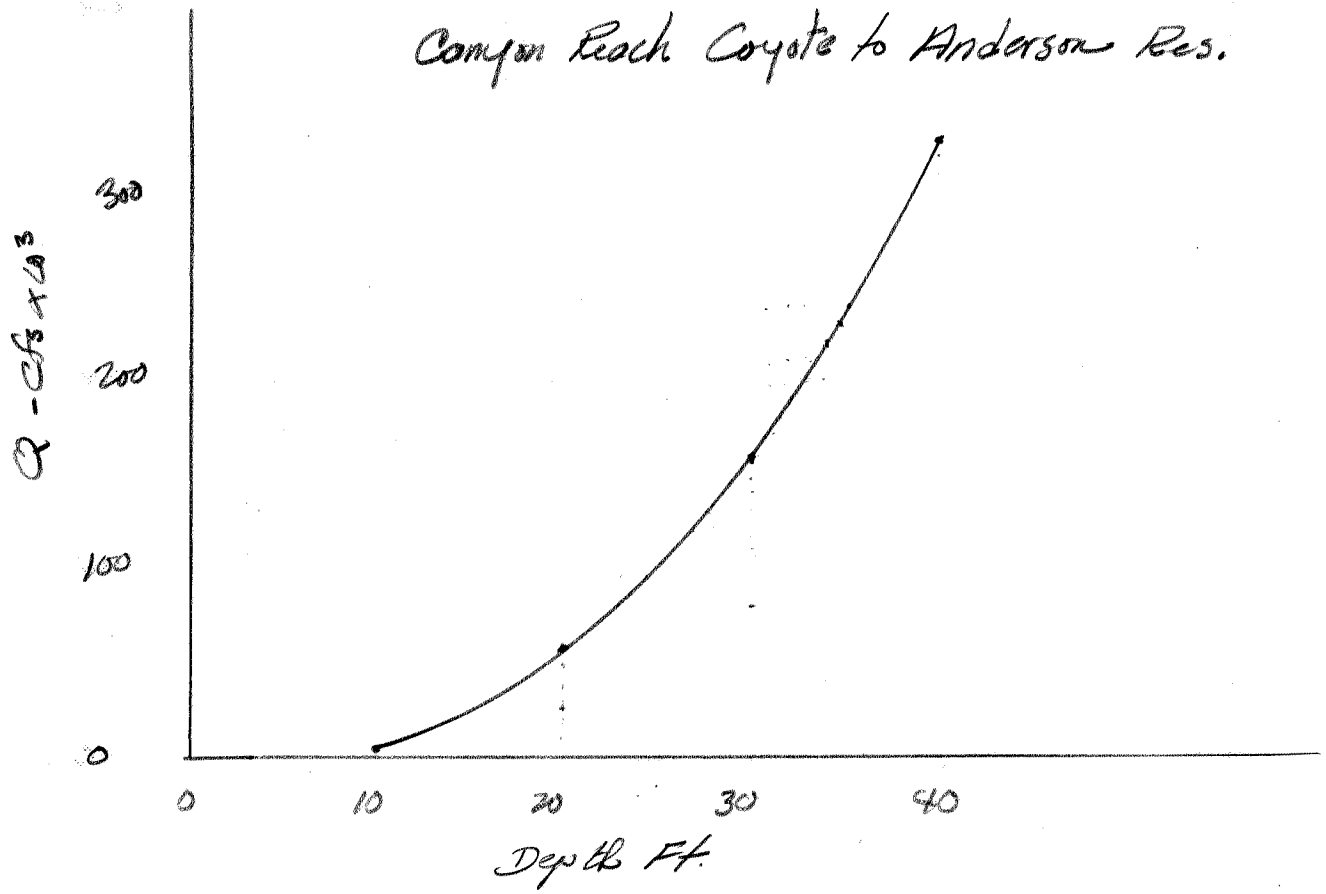

Anderson Dam Spillway

Crest L = 191' Coef. = 24,000 H = 10'

$Q = CLH^{3/2}$

$24000 / 191 \times 10^{3/2} = C$ C = 397

H	$H^{3/2}$	Crest length	Q	Flow over dam. $Q = 3.1 \times 1385\, d^{3/2}$		
				d	$d^{3/2}$	Q cfs.
0				1'	1	4300
2	2.83	191	21,00	2	2.83	12,100
4	8.00	"	6100	4	8.00	34,500
6	14.7	"	11,100			
10	31.6	"	24,000			
15	58.1	"	44,000			

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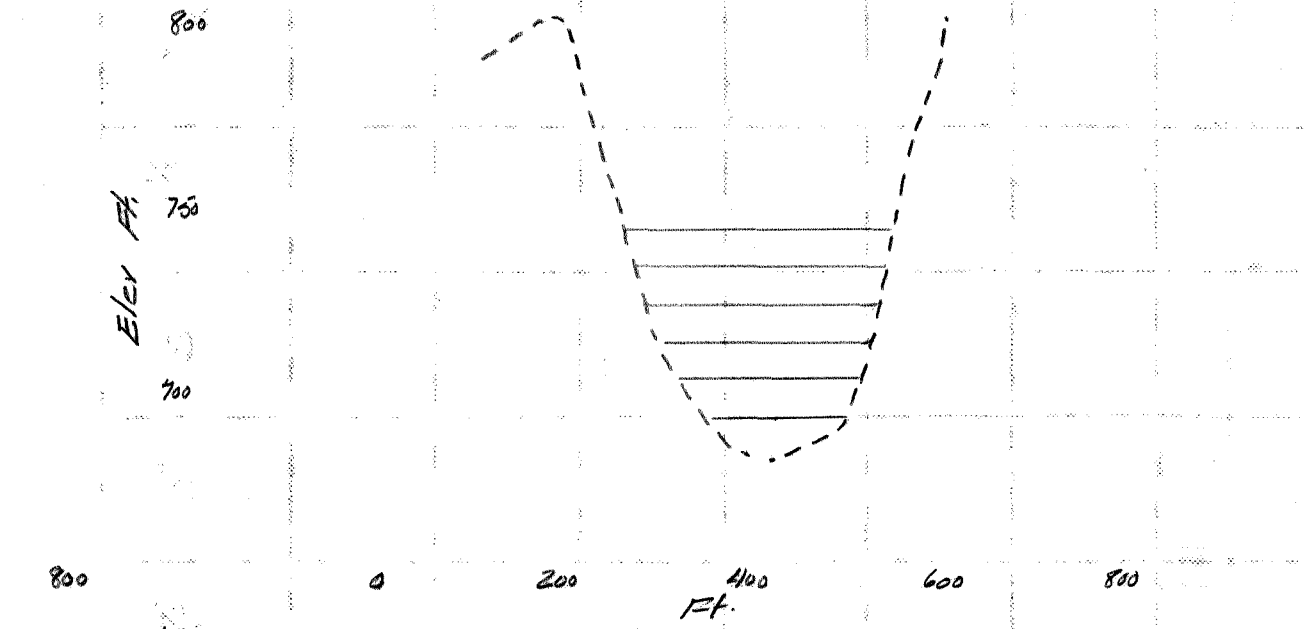
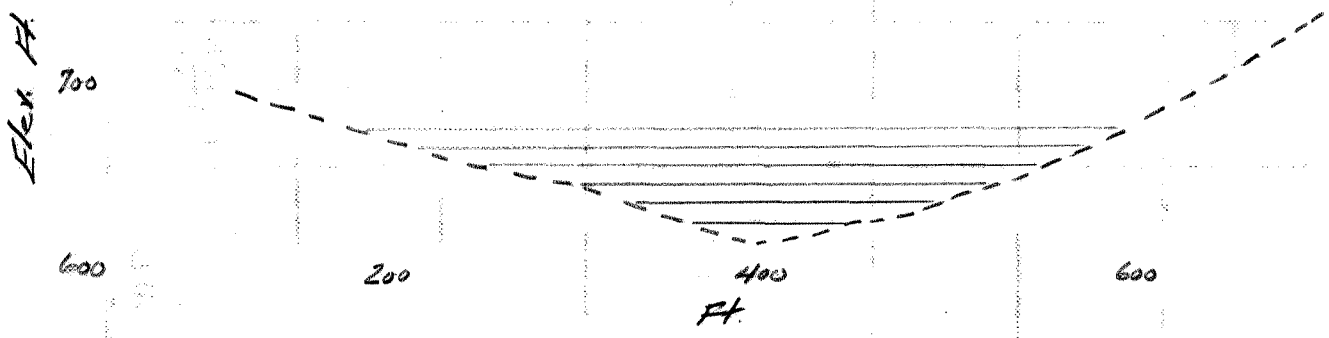
Canyon Reach Coyote Dam to Anderson Res

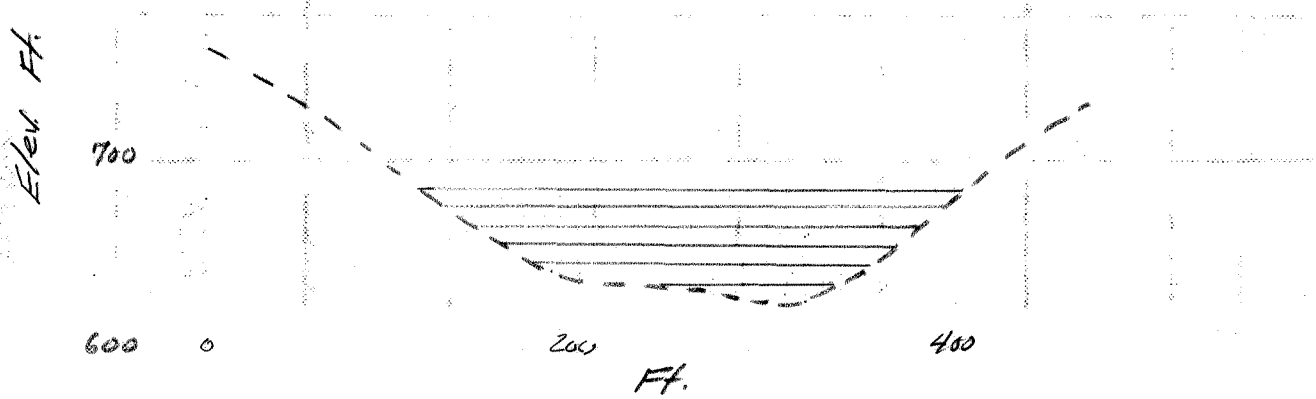
Section 200' below Coyote Dam axis



Section 5000' downstream



Section 10,000' downstream



Outflow at Downstream Channel Section — Mannings Formula

Pt. Anderson Res.

ELEV.	DEPTH	AREA FT^2	WP $=T+2D$	$R=\frac{A}{WP}$	$R^{2/3}$ ✓	"n" ✓	S	$S^{1/2}$ ✓	$V=\frac{1.49}{n}R^{2/3}S^{1/2}$	Q CFS $\times 10^3$
	10	400	100	4	2.52	.035	.023	.15	16.1	6.4
	20	1900	190	10	4.64	.035	.023	.15	29.6	56.2
	30	3800	225	16.9	6.59	.035	.023	.15	42.1	160
	40	6000	260	23.1	8.11	.033	.023	.15	54.9	329
	50	8500	295	28.8	9.40	.033	.023	.15	63.6	541
	60	11,300	330	34.2	10.54	.033	.023	.15	71.4	809

Storage Volume — N Values

Coyote Cr. – Coyote Dam to Mouth, Rev.

DEPTH / ELEV	X-SECTION AREA Ft² Section Upstream	X-SECTION AREA Ft² Section Downstream	Avg Area Ft²	Volume = Area × L ×10³	Volume CF-Min ×10³	V/Δt t=5min	V/Δt t=10min ×10³	V/Δt t=20min	REACH Outflow CFS ×10³	N = V/Δt + O/2 t=5	N = V/Δt + O/2 t=10 ×10³	N = V/Δt + O/2 t=2
10	800	450	625	3120	87		8.7		6.4		11.9	
	450	400	425	2120								
20	2550	1750	2150	10,750	331		33.1		56.2		61.2	
	1750	1900	1825	9120								
30	4650	3650	4150	20,750	656		65.6		160		145.6	
	3650	3800	3725	18,620								
40	7050	6150	6600	33,000	1056		105.6		329		270.1	
	6150	6000	6075	30,375								
50	8650	9100	9375	46,870	1514		151.4		541		421.9	
	9100	8500	8800	44,000								
60	12,450	12,450	12,450	62,250	2027		202.7		807		606.2	
	12,450	11,300	11,875	59,370								

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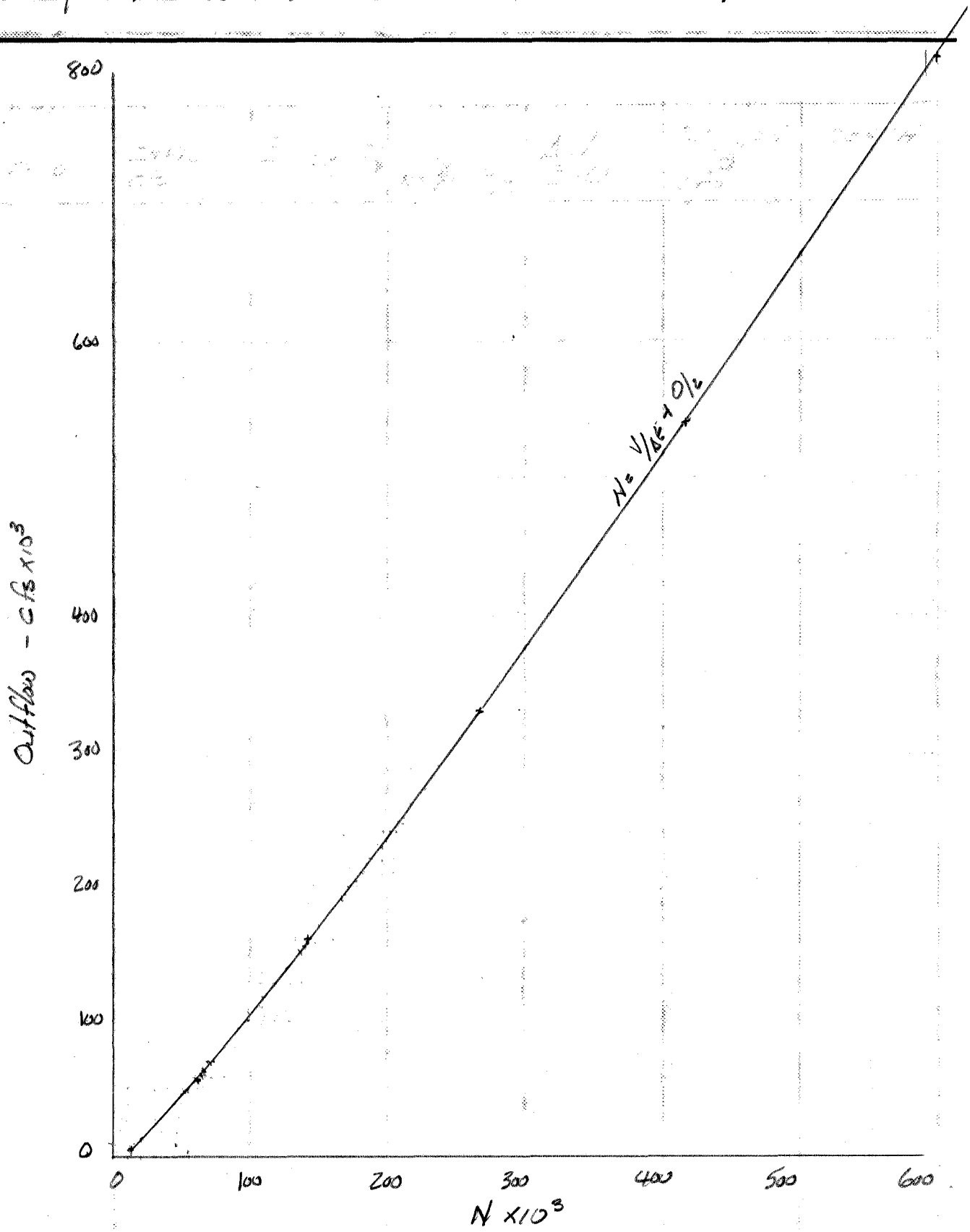

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Coyote Dam to Md. Res.

TIME	INFLOW cfs x10³	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + \frac{O}{2}$	ΔN $\bar{I} - O$	OUTFLOW "Q" cfs x10³	DEPTH
0	.5	58	1	57	.5	
10	115	102	58	42	60	
20	189	212	100	112	100	
30	234	232	212	47	185	
40	229	227	259	27	220	
50	224	223	286	-17	240	35
60	221	220	269	-10	230	
70	219	207	259	-13	220	
80	194	168	246	-42	210	
90	141	83	204	-97	180	
100	24	17	107	-84	101	
110	9	9	23	21	30	
			2		9	

10 yr. Flood

a) peak Q = 10,000 cfs.

b) 2 hr. Q = 9400 cfs.

Max W.S. Elev. Spillway Crest Base Flow = 2 hr peak 10 yr Flood Flow

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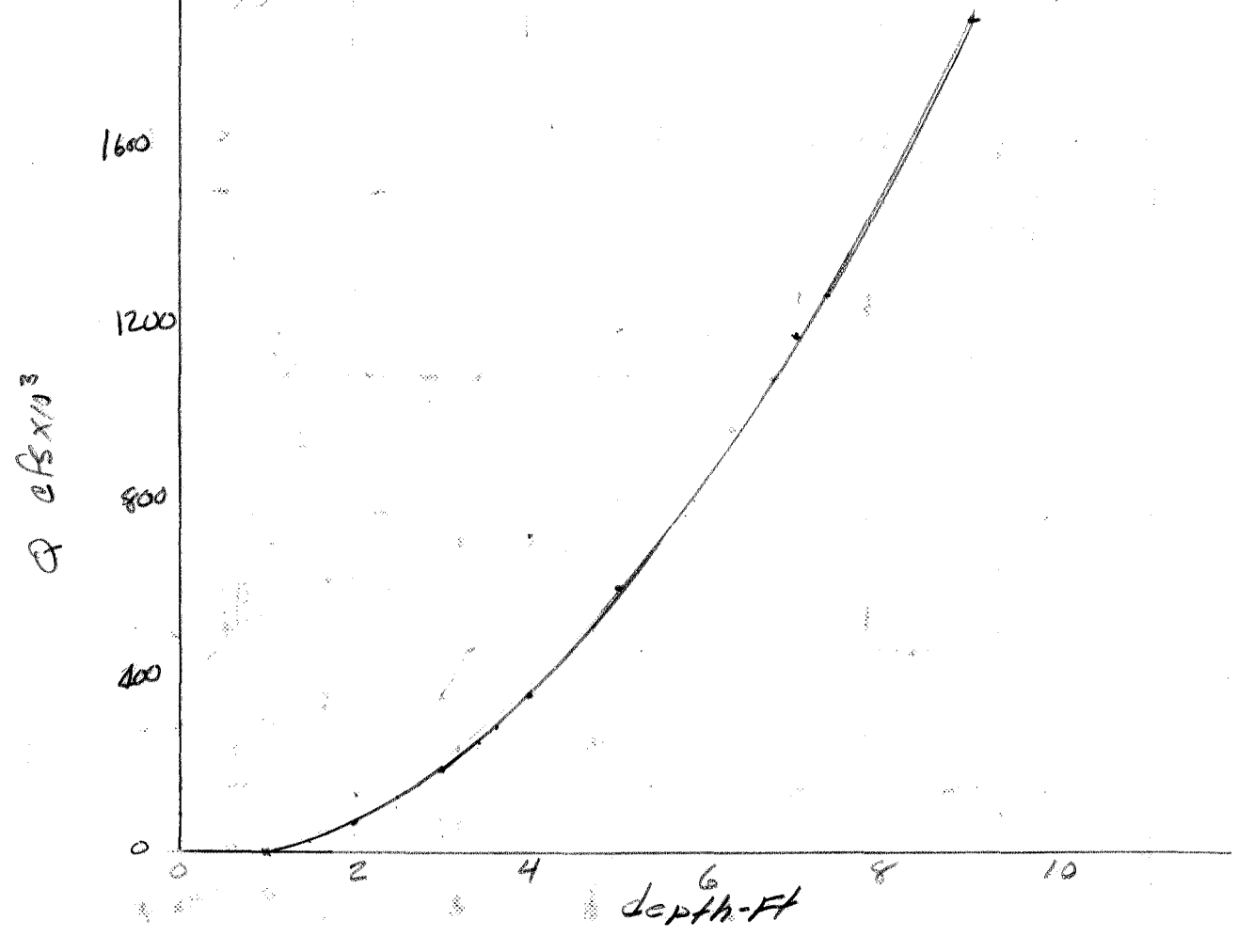
Reservoir - Burnett Rd to E. Main Av.

Area = $28.15 \times 2.0 \times 10^3 \times 2.0 \times 10^3 = 112.6 \times 10^6$ Sq Ft.

Boundary Weirs $Q = 3.1 L H^{3/2}$

depth	$d^{3/2}$	L = 8200 Burnett Rd H-Ft	Q-Cfs	L = 12000 East Main Av. H-Ft	Q-Cfs	L = 10,200 SPRR H-Ft	Q-Cfs
0	-	-		-		-	
1	1	0		0		-	
2	2.83	1	25,000	1	37,000	-	
3	5.20	2	73,000	2	105,000	0	
4	8.00	3	132,000	3	193,000	1	32,000
6	14.70	4	203,000	4	298,000	2	89,000
8	22.63	6	374,000	6	547,000	4	253,000
10	31.62	8	575,000	8	841000	6	465,000



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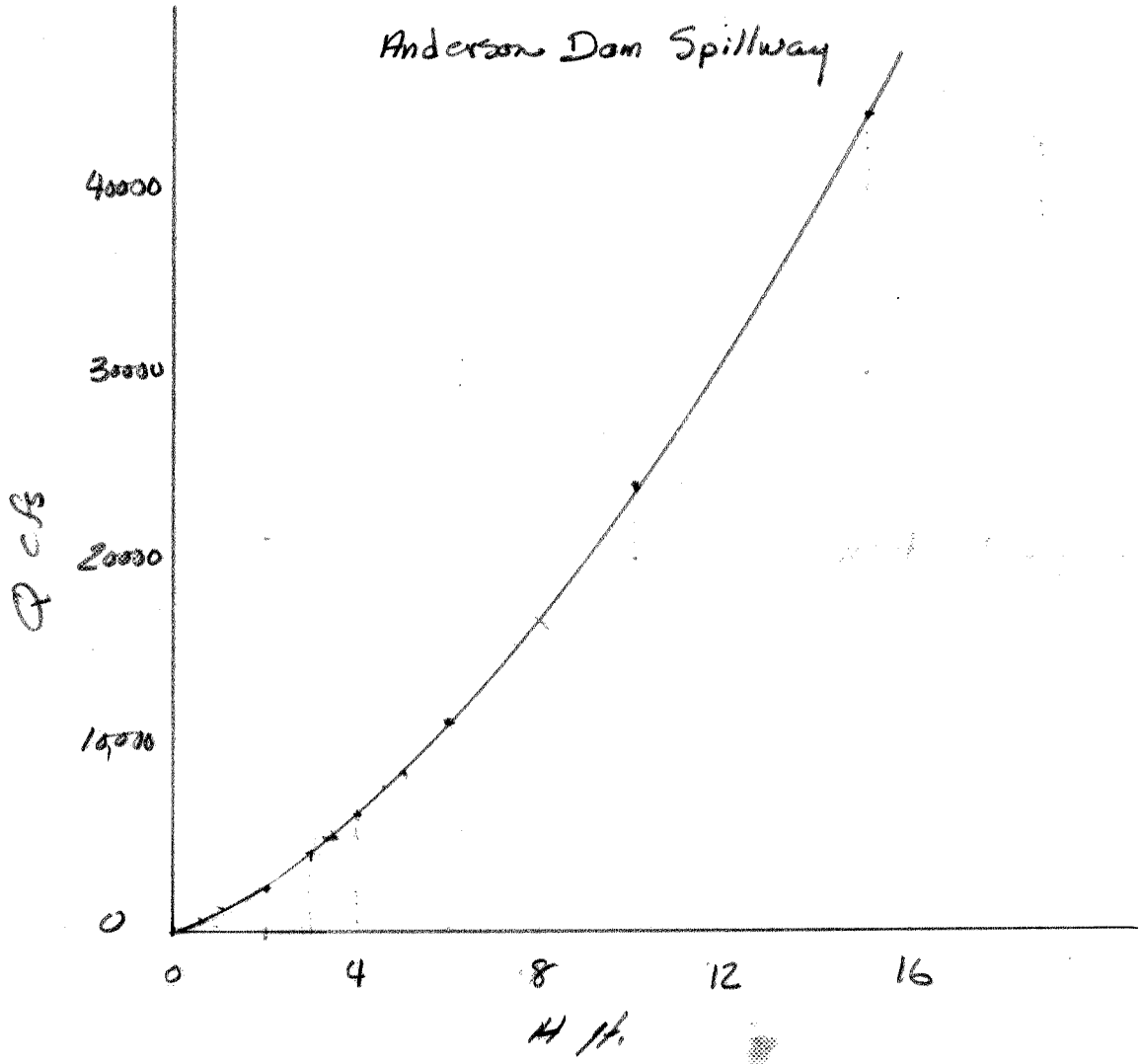

Depth	Storage AF	Storage cfs. $\times 10^8$	$V/\Delta t$ $t = 20$ $\times 10^3$	Outflow cfs	$N = \frac{V}{\Delta t} + O/2$ $\times 10^3$
0	0	0	—	—	—
5	6200	4501	225	7500	229
10	13,200	9583	479	24000	491
15	20,200	14,665	733	44000	755
19	23,200	16,843	842	78,500	881

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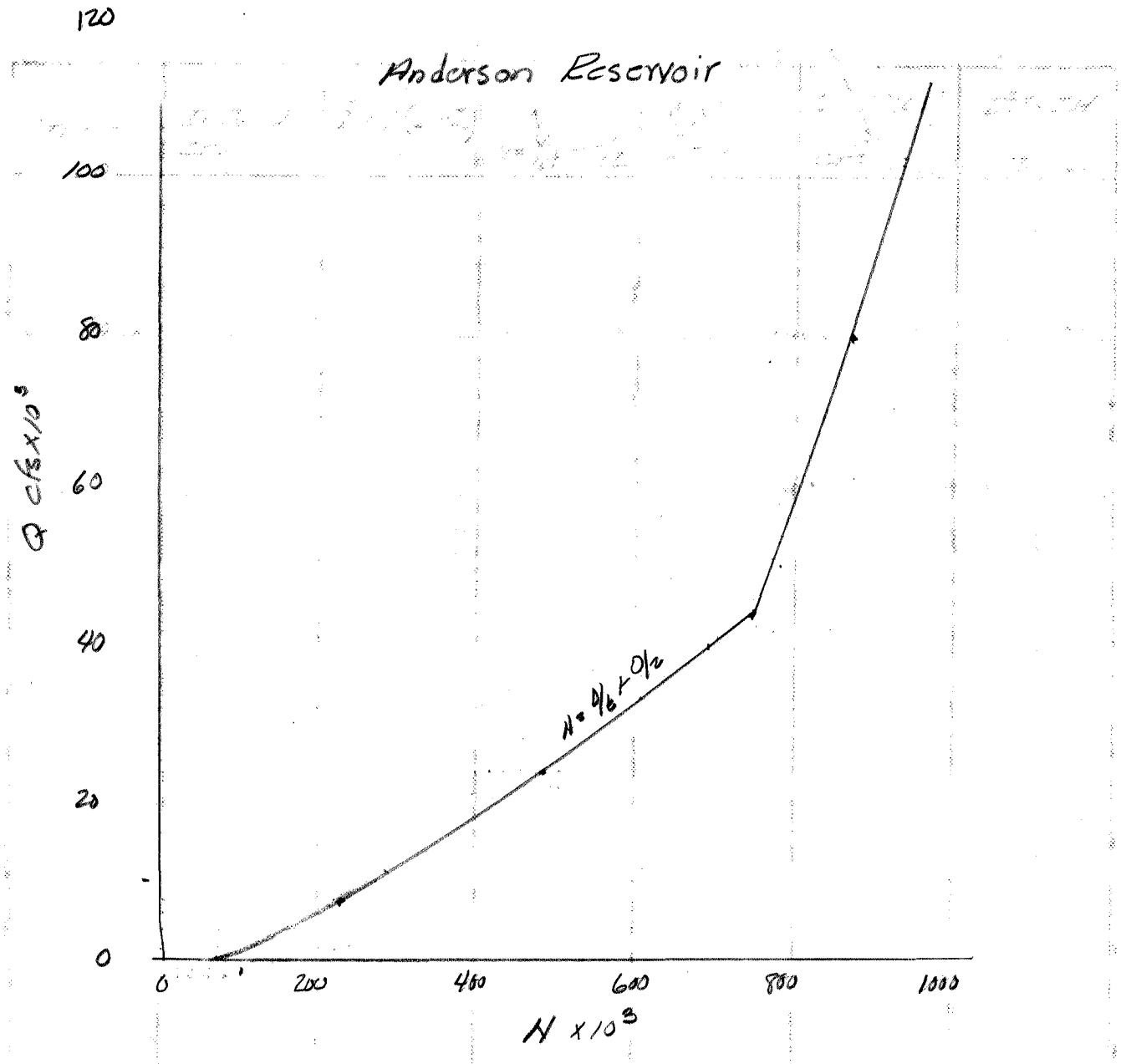

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TIME	INFLOW cfs x 10^3	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{2}{\Delta t} + O_2$	ΔN $\bar{I} - O$	OUTFLOW O cfs x 10^3	DEPTH
0	6	56	70	55	.5	-
20	106	166	125	164	2	
40	226	231	289	220	11	
60	236	226	509	203	23	
80	216	162	712	121	41	
100	107	61	833	-3	64	18
120	15	15	830	-49	64	18
140	15	15	781	-36	51	
160			745		43	

10 yr. Flood.

a) 2 hr. flood flow - Anderson Res. 5800 cfs. use 6000 cfs.
Inflow = 1000 AF d = .5' Q = 500 cfs (outflow)

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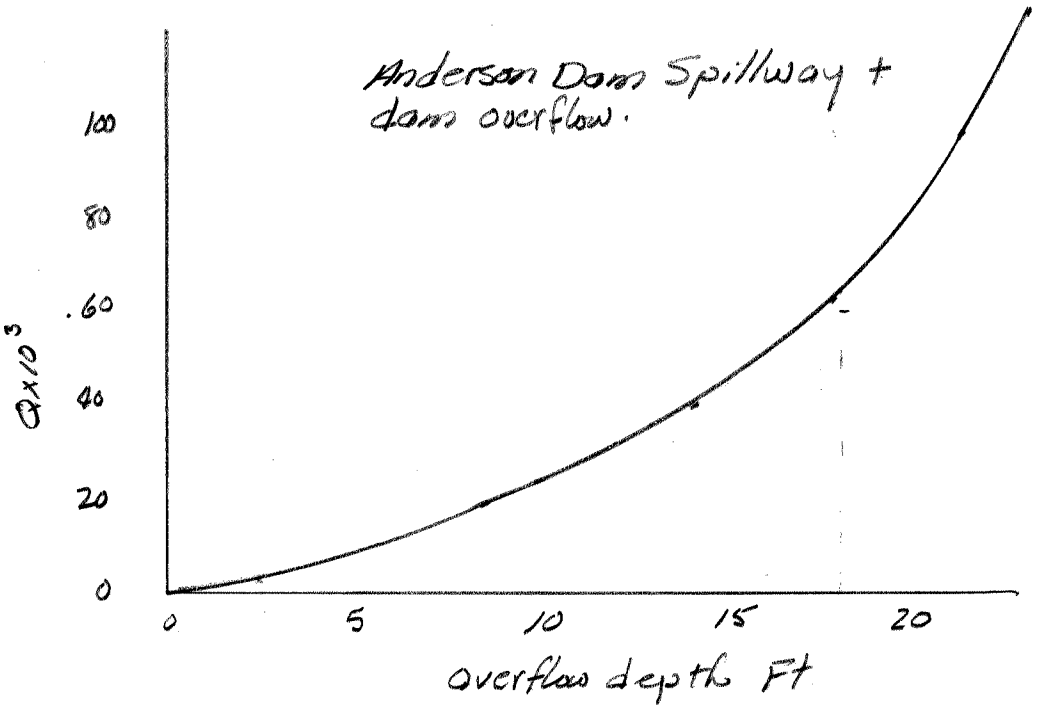

Max depth over Spillway Crest 18'
Freeboard 15'
Spill over tops of Dam (Anderson) 3'

$Y_0 = 240 + 3 = 243$

Outflow Hydrograph - Anderson Dam

Assume 6 breaks - 20 Min. between breaks.
- break width 700'
- Initial water depth 243'
- depth of break 40'

$$Q = 8/27\sqrt{g} \times W_b \times d^{3/2}\left[\frac{W_d}{W_b} \times \frac{Y_o}{d}\right]^{.28}$$

Res. Length (longest arm) = 23,000 Ft.

Initial break

T = 20 Min $d = 40 + 3 = 43'$

$$Q = 1.68 \times 700 \times 43^{3/2}\left[\frac{1410}{700} \times \frac{243}{43}\right]^{.28} = 331.6 \times 10^3 [11.3]^{.28}$$

$Q = 331.6 \times 10^3 \times 1.97 = 653.2 \times 10^3$ cfs.

$t_c = 2 \times 29{,}000 / \sqrt{32 \times 121} = 932$ Sec 16 Min.

Note Q remains constant for 16 Min

Vol in Storage end of 16 Min $116{,}000 - 960 \times 653{,}200/43560 = 101{,}600$

W.S. El = 632

Vol at El 600 = 64,000

time to drain to El 600 $= (101{,}600 - 64{,}000)\,43560 / 653{,}200/2 = 1638 \times 10^6 / .327 \times 10^6$

t = 5010 Sec 83 Min

Q at end of 20 Min = $653{,}200 - 8/83 \times 653{,}200 = 590{,}300$ cfs

Actual change in Vol (T = 20 Min) $= 14{,}400 + [240 \times 621{,}000/43560] = 17{,}800$ AF

Change (assume Q Const for 20 Min) $1200 \times 653{,}200/43560 = 18{,}000$ AF

Note: Neglect change in Q after t_c - Assume discharge is Constant for break time period.

Vol in Storage - end of T = 20 Min = 116,000 − 18,000 = 98,000 AF

W.S. El 630'

2nd break

$T = 20$ Min W.S. El 630'

$d = 630 - 560 = 70$ $W_b = 700$ $W_d = 1330$ $Y_o = 230$

$$Q = 1.68 \times 700 \times 70^{3/2} \left[\frac{1330}{700} \times \frac{230}{70} \right]^{.28} = 688,700 \left[6.24 \right]^{.28} = 688,700 \times 1.67$$

$Q = 1,150,000$ cfs.

$t_c = 2 \times 24,000 / \sqrt{32 \times 115} = 790$ Sec 13 Min

Vol (T = 20 Min) $= 1200 \times 1,150,000 / 43560 = 31,700$ AF

Vol in Storage $= 98,000$ AF $- 31,700$ AF $= 66,300$ AF

W.S. El = 602'

3rd break.

T = 20 Min W.S El 602'

$d = 602 - 520 = 82'$ $W_b = 700'$ $W_d = 1220$ $Y_o = 202'$

$$Q = 1.68 \times 700 \times 82^{3/2} \left[\frac{1220}{700} \times \frac{202}{82} \right]^{.28} = 873,200 \left[4.29 \right]^{.28} = 873,200 \times 1.50$$

$Q = 1,310,000$ cfs

$t_c = 2 \times 21000 / \sqrt{32 \times 101} = 740$ Sec 12 Min

Vol (T = 20 Min) $= 1200 \times 1,310,000 / 43560 = 36,100$ AF

Vol in Storage $66,300 - 36,100 = 30,200$ AF

W.S. Elev. 561'

4th break

$T = 20$ Min W.S. El 561

$d = 561 - 480 = 81'$ $W_b = 580$ $W_d = 1020$ $Y_o = 161'$

$$Q = 1.68 \times 580 \times 81^{3/2} \left[\frac{1020}{700} \times \frac{161}{81} \right]^{.28} = 710,300 \, (2.90)^{.28} = 710,300 \times 1.35$$

$Q = 959,000$ cfs.

$t_c = 2 \times 18000 / \sqrt{32 \times 81} = 710$ Sec 12 Min

Vol in Storage ($T = 15$ Min) $= 900 \times 959,000 / 43,560 = 19,800$ AF

$30,200 - 19,800 = 10,400$ AF W.S. El. $= 512'$

Vol in Storage ($T = 20$ Min) $= 1200 \times 959,000 / 43560 = 26,400$ AF

$30,200 - 26,400 = 3800$ AF

W.S. El $= 485$

5th break.

$T = 20$ Min W.S. El. 485

$d = 45$ $W_b = 150$ $W_d = 678$ $Y_o = 85$

$$Q = 1.68 \times 150 \times 45^{3/2} \left[\frac{670}{150} \times \frac{85}{45} \right]^{.28} = 76,100 \, [8.4]^{.28} = 76,100 \times 1.8$$

$Q = 137,000$ cfs.

$t_c = 2 \times 10,000 / \sqrt{32 \times 40} = 571$ Sec 10 Min

time to drain to El 440 $= (3800 - 200) 43560 / 137,000 = 1145$

$T = 19.1$ Min

6 th break.

Not computed.

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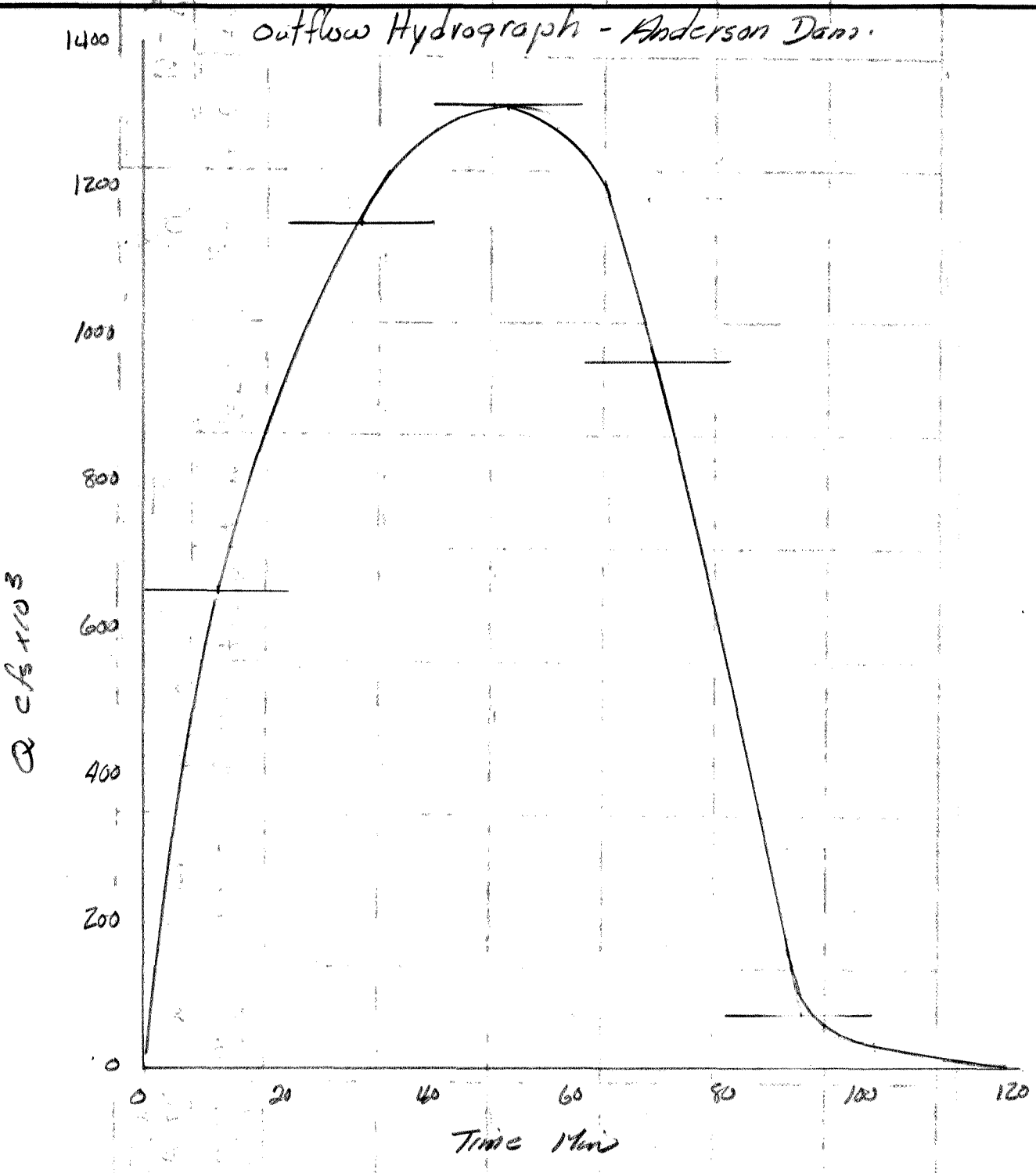

Storage Volume – N Values

Res. Burnett Rd – E. Main Hw.

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area x L	Volume CF-Min X10³	V/Δt			REACH Outflow CFS X10³	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t=5min	t=10min X10³	t=20min		t=5	t=10	t=2 X10³
0					–							
1					1880			94.0	0			94.0
2					3750			187.5	62			218.5
3					5630			281.5	178			370.5
4					7510			375.5	357			554.0
7					13140			656.8	1174			1243
9					16,890			844.5	1881			1785
10												

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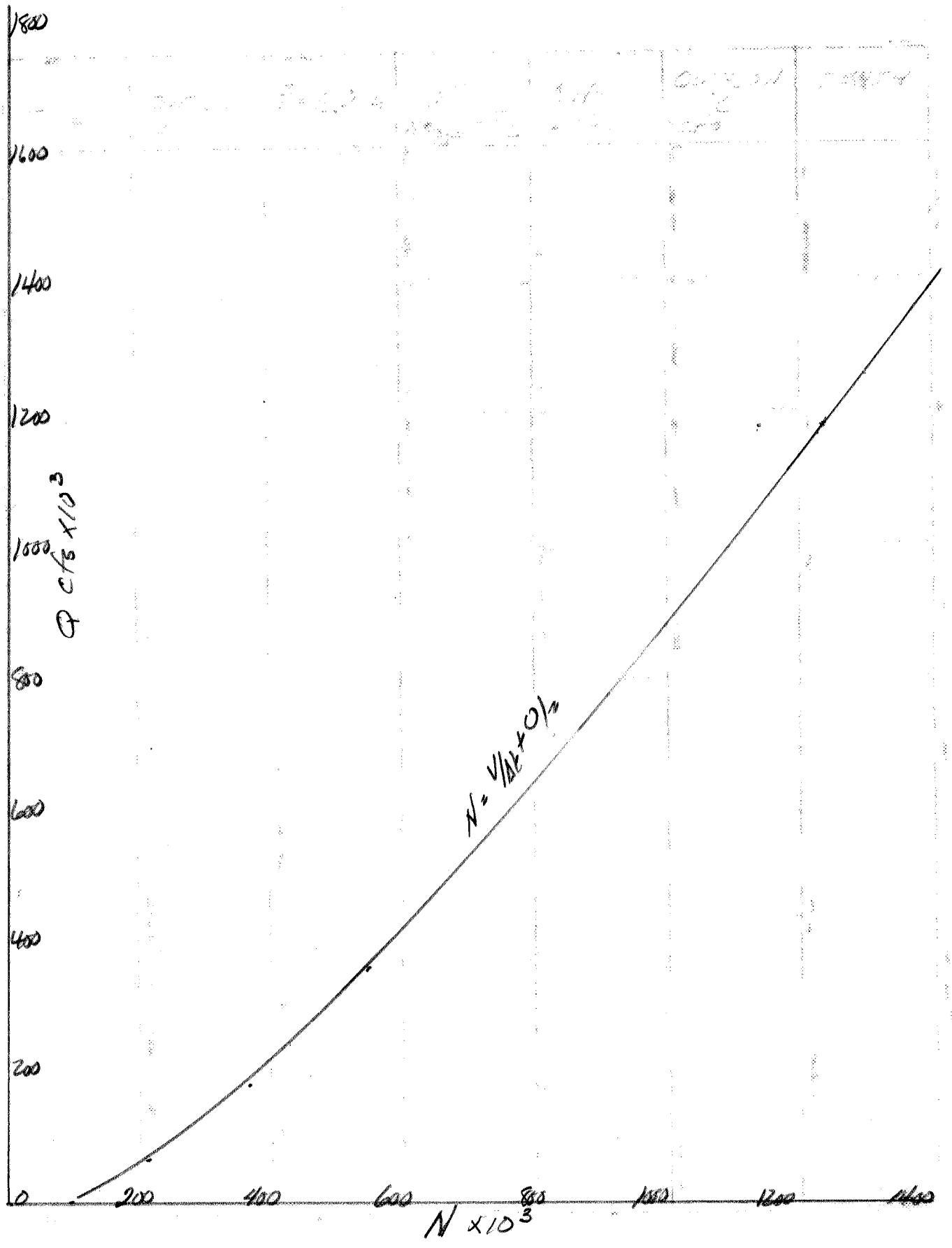
Subject Coyote - Anderson Dams Failure Job No. _____



By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 24 of _____

Subject Coyote Hidenson Dam Failure Job No. _____

Res Burnett Rd. - E. Main Av.

TIME	INFLOW cfs x10³	$\bar{I} = \frac{1}{2}(I_1+I_2)$	N $N = \frac{V}{\Delta t} + \frac{O}{2}$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH
0	1	475	1	474	1	—
20	950	1115	475	835	280	3.4
40	1280	1260	1310	6	1260	7.3
60	1240	895	1310	-365	1260	7.3
80	550	290	945	-510	800	5.8
100	30	15	435	-235	250	3.2
120	0	0	200	-60	60	2.0
140			140	-30	30	1.5
160			110	-10	10	1.1
180			100		0	1.0

Note - Neglect 10 yr flood flows.

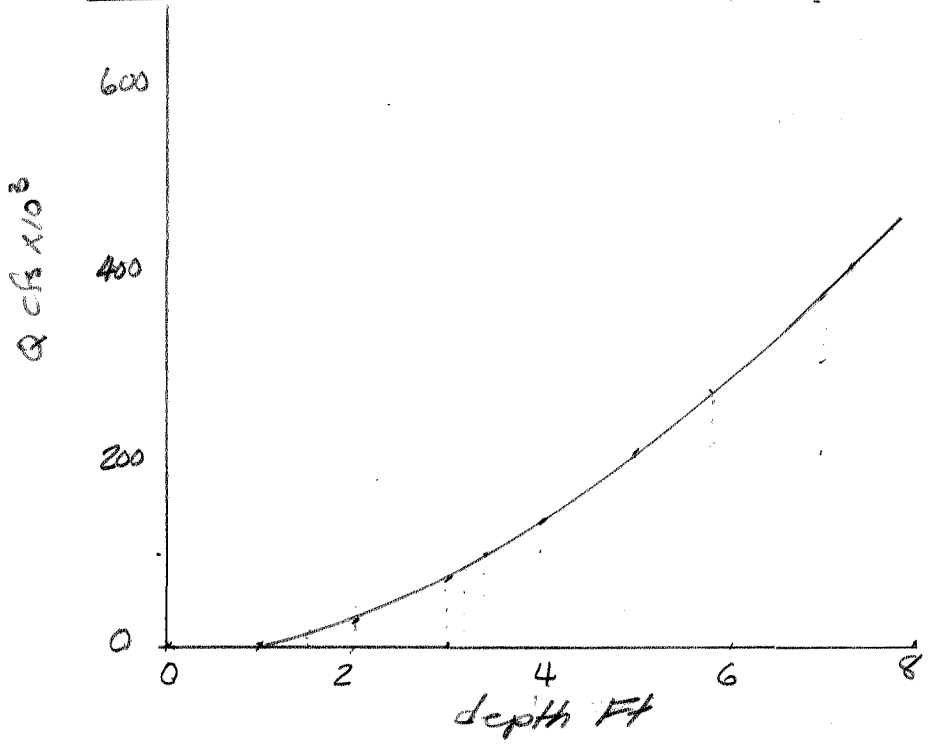
SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 25 of _____

Subject Coyote - Anderson Dam Failure Job No. _____

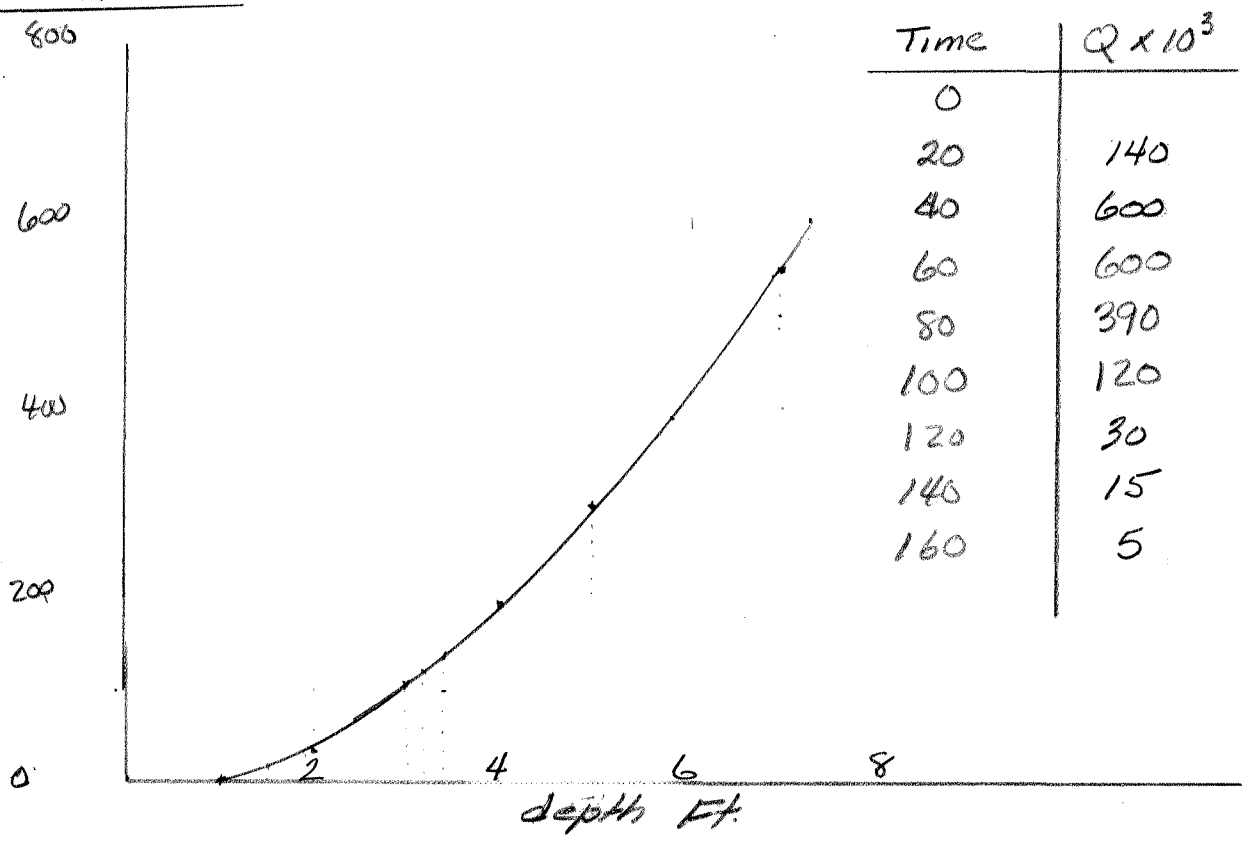
Allocation of outflow hydrograph

Burnett Rd Weir



Time	Q x10³
0	0
20	100
40	400
60	400
80	270
100	80
120	30
140	15
160	5

East Main Av.



Time	Q x10³
0	
20	140
40	600
60	600
80	390
100	120
120	30
140	15
160	5

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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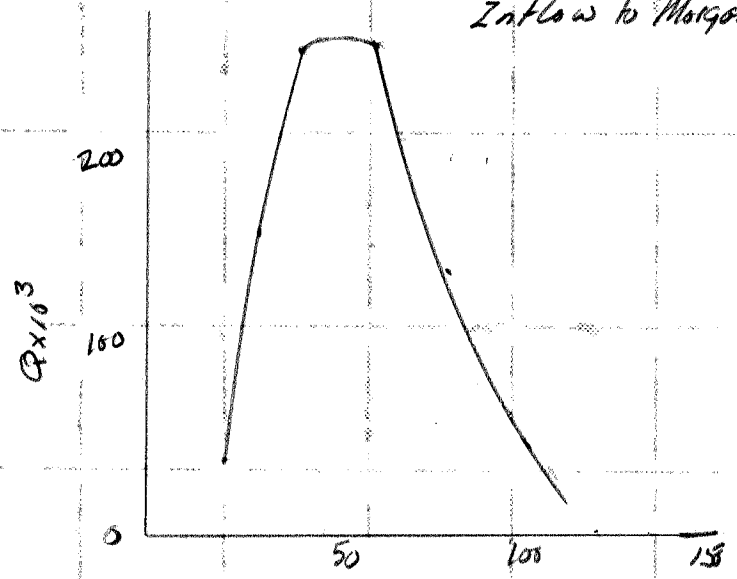
Subject Coyote Anderson Dam Failure Job No. ____

SPEE. Weir

Time	$Q \times 10^3$
0	0
20	40
40	260
60	260
80	140
100	50
120	0
140	
160	

Inflow to Morgan Hill Res.



Morgan Hill Res.

Area = $5.6 \times 4 \times 10^6 = 22.4 \times 10^6$ CF

Boundary Weirs $Q = 3.1 L H^{3/2}$

depth	$d^{3/2}$	Orchard Av. $L = 3300'$ H	Orchard Av. Q	E. Main Av. $L = 3300$ H	E. Main Av. Q
0		-			
1	1	0	0		0
2	2.83	1	10,200		10,200
3	5.20	2	29,000		29,000
5	11.18	3	53,200		53,200
7	18.52	5	114,700		114,700
		7	189,500		189,500

Storage Volume – N Values

Res. at Morgan Hill

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area x L	Volume CF-Min x10³	V/Δt x10³			REACH Outflow CFS x10³	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t=5min	t=10min	t=20min		t=5	t=10	t=20
0									-			-
1					377		37.7	18.9	0		37.7	18.9
2					747		74.7	37.4	20.4		84.9	47.6
3					1120		112.0	56.0	58.0		141.0	85.0
4					1493		149.3	74.7	106		202.3	127.9
6					2240		224.0	112.0	229		338.5	226.
8					2987		298.7	149.3	379.0			338.8

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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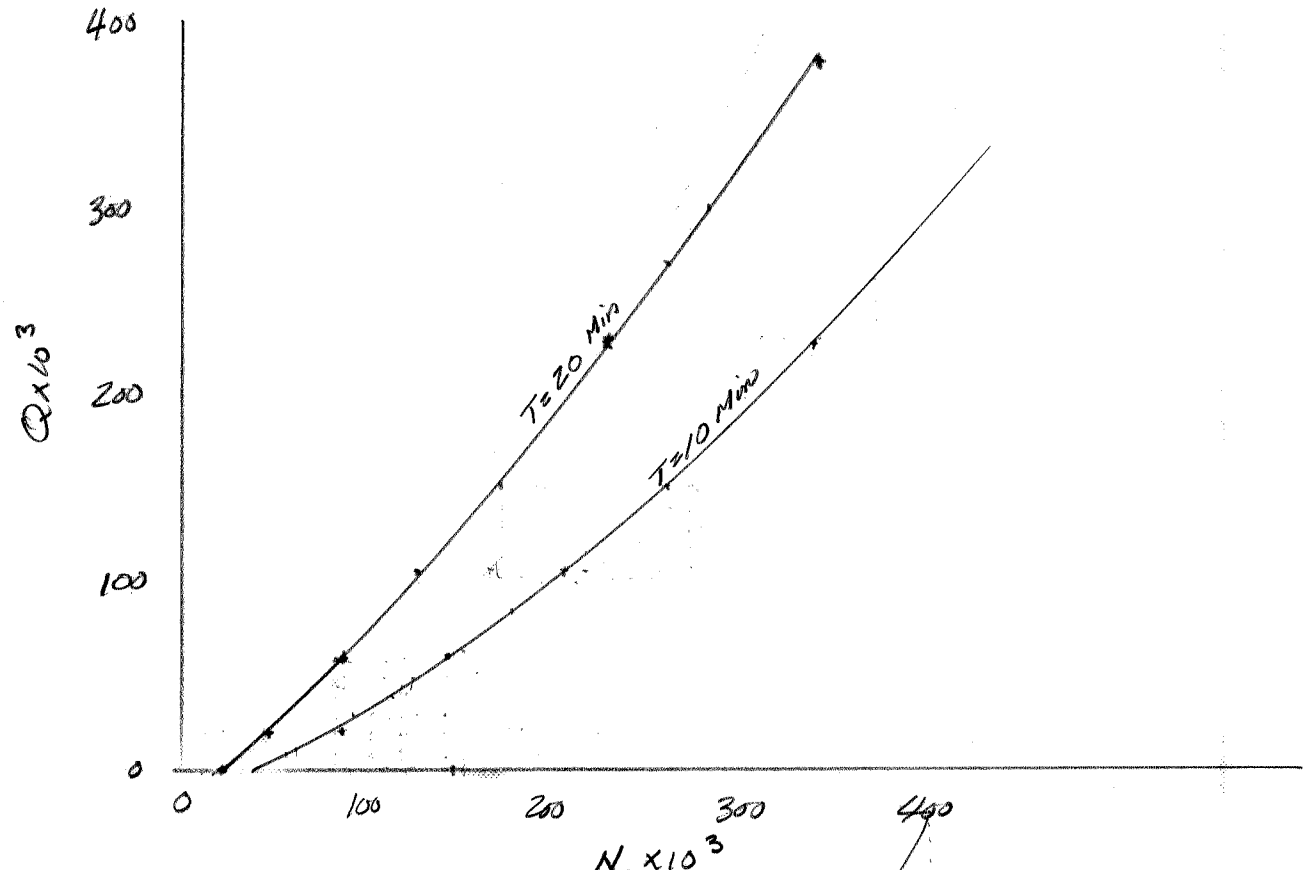

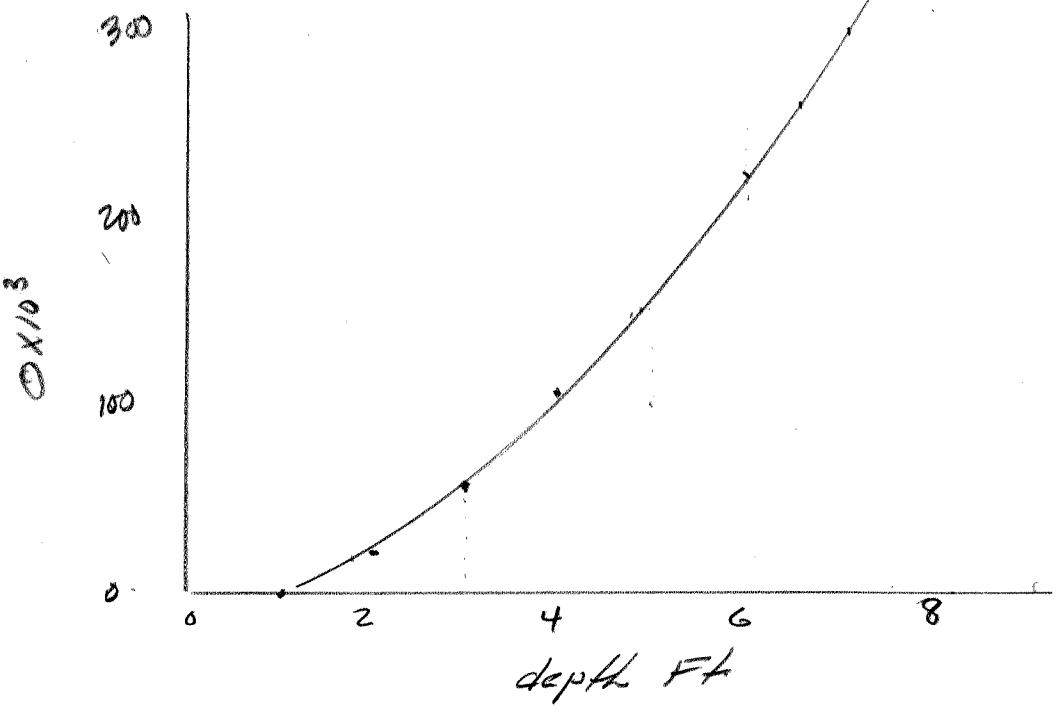

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Subject Coyote - Anderson Dam Failure Job No. _____

Res. at Morgan Hill

Time	Inflow cfs x10^3	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	$\frac{V}{\Delta t} + O/2$	ΔN	Outflow cfs x10^3	depth
0	0		0		0	
10	0	0	0	20	0	
20	40	20	20	100	0	
30	160	100	120	140	80	
40	260	220	260	110	150	
50	260	260	370	0	260	6.3
60	260	260	370	-35	260	6.3
70	190	225	335	-60	225	
80	140	165	275	-50	165	
90	90	115	225	-50	120	
100	50	70	175	-50	85	
110	20	35	125	-40	50	
120	0	10	85	-20	20	
130		0	65	-10	10	
140			55		5	
150			50		0	

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 30 of _____

Subject Coyote - Anderson Dam Failure Job No. _____

Reach South of East Main Av.

Reservoir - East Main to Tennant Ave.

Area = $32.1 \times 4.0 \times 10^6 = 128.4 \times 10^6$ SF

Inflow hydrograph

Time	East Main to SPRR	East Main to hills	Total
0	0	0	0
20	140	70	140
40	600	75	675
60	600	130	730
80	390	83	473
100	120	43	163
120	30	10	40
140	15	2	17
160	5	-	5
180			

Boundary Weir - Tennant Av. $L = 15,700$ $Q = 3.1 L H^{3/2}$

depth	$d^{3/2}$	H	Q cfs
0		0	0
1	1.0	0	0
2	2.83	1	48,700
3	5.20	2	137,800
4	8.00	3	253,000
5	11.18	4	389,400
		5	544,100

Storage Volume — ND Values

Res - East Main to Tennont Av.

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area x L	Volume CF-Min x10³	V/Δt x10³			REACH Outflow CFS x10³	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t=5min	t=10min	t=20min		t=5	t=10	t=20
0					0							0
1					2140			107	0			107
2					4280			214	48.7			238.4
3					6420			321	137.8			389.9
4					8560			428	253.0			554.5
5					10,700			535	389.4			729.7
6					12,840			642	544.1			914.5

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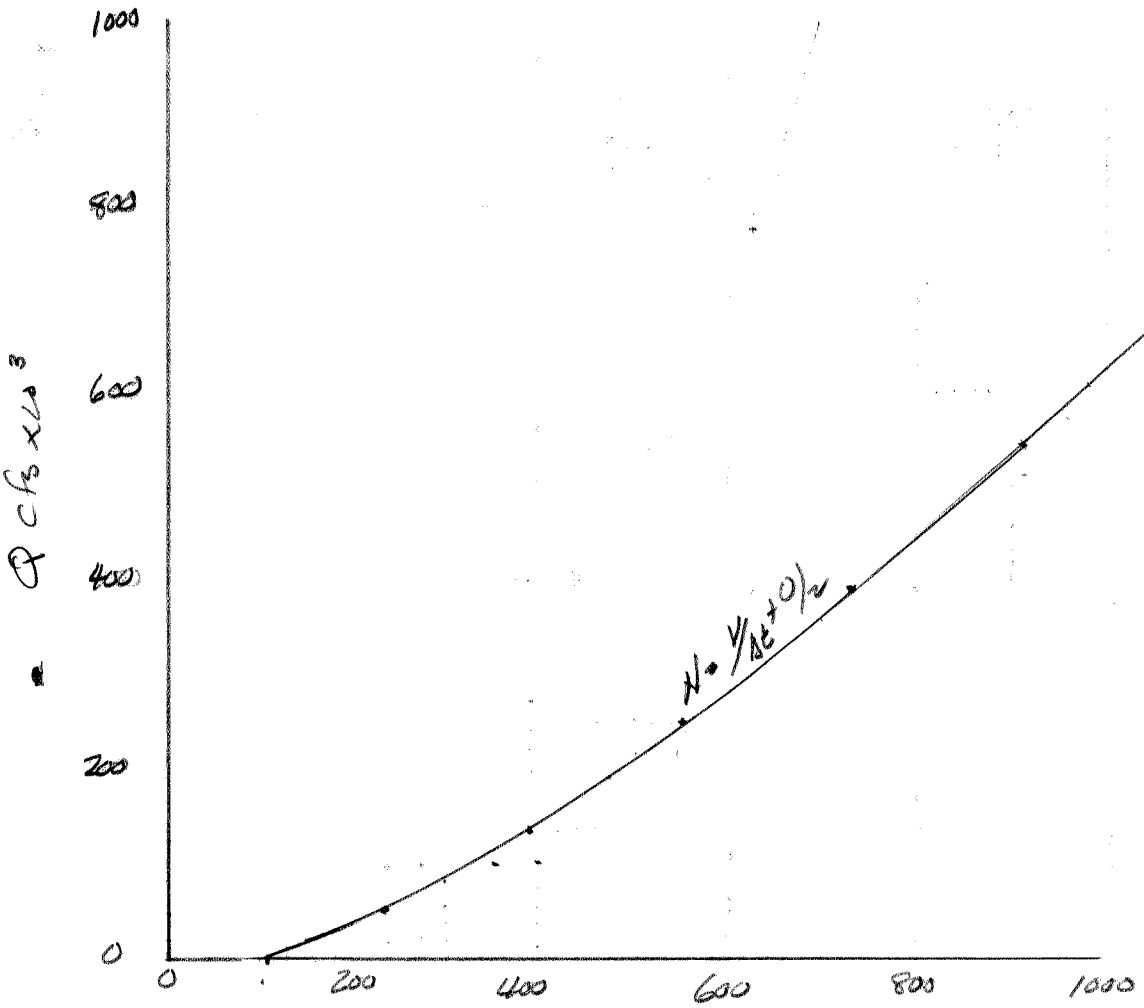

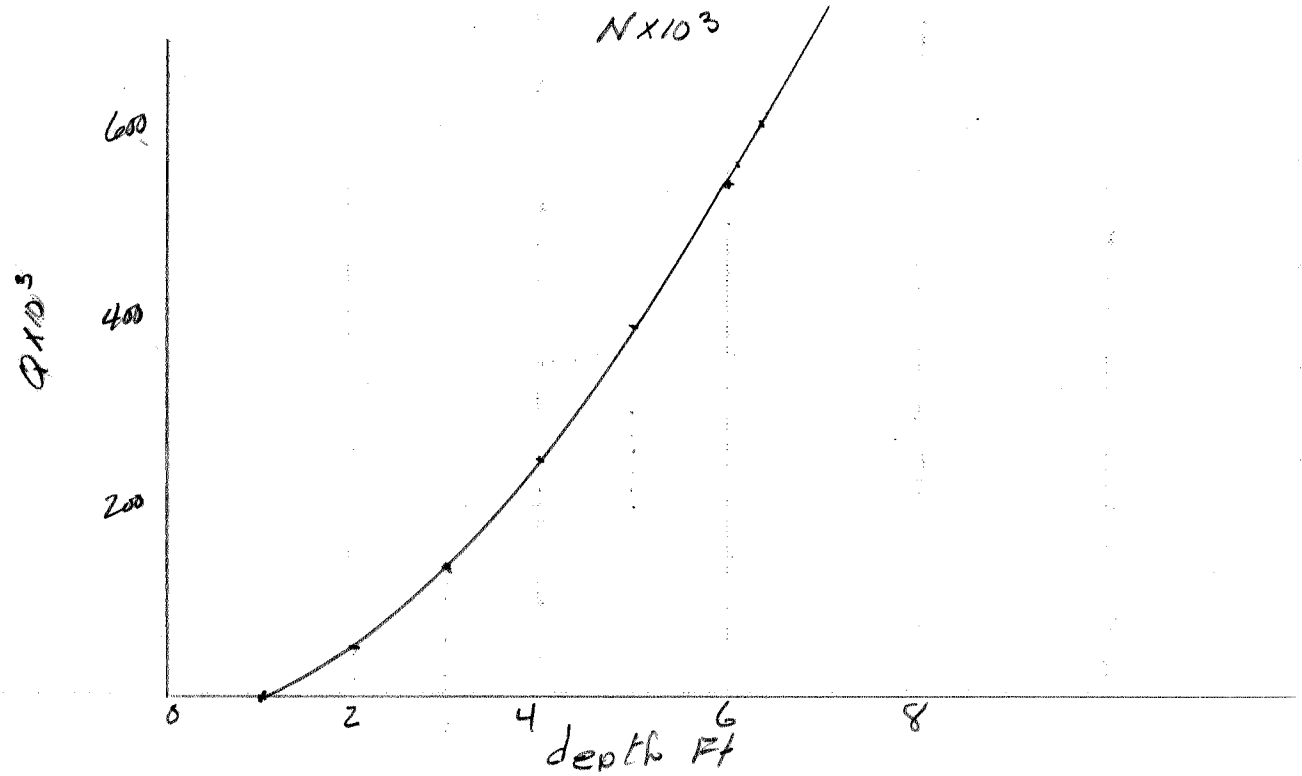

By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 33 of _____

Subject Coyote Anderson Dam Failure
East Main & Tennant Ave.

Job No. _____

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + \frac{O}{2}$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH Ft.
0	0	70	0	70	0	
20	140	408	70	408	0	
40	675	703	478	513	190	3.5
60	730	601	991	−9	610	6.3
80	473	318	982	−282	600	6.3
100	163	102	700	−258	360	4.8
120	40	29	442	−141	170	
140	17	11	301	−74	85	
160	5	3	227	−47	50	
180	0	0	180	−30	30	
200			150	−20	20	
220			130	−10	10	
240			110		0	

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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Subject Coyote - Anderson Dam Failure Job No. _____

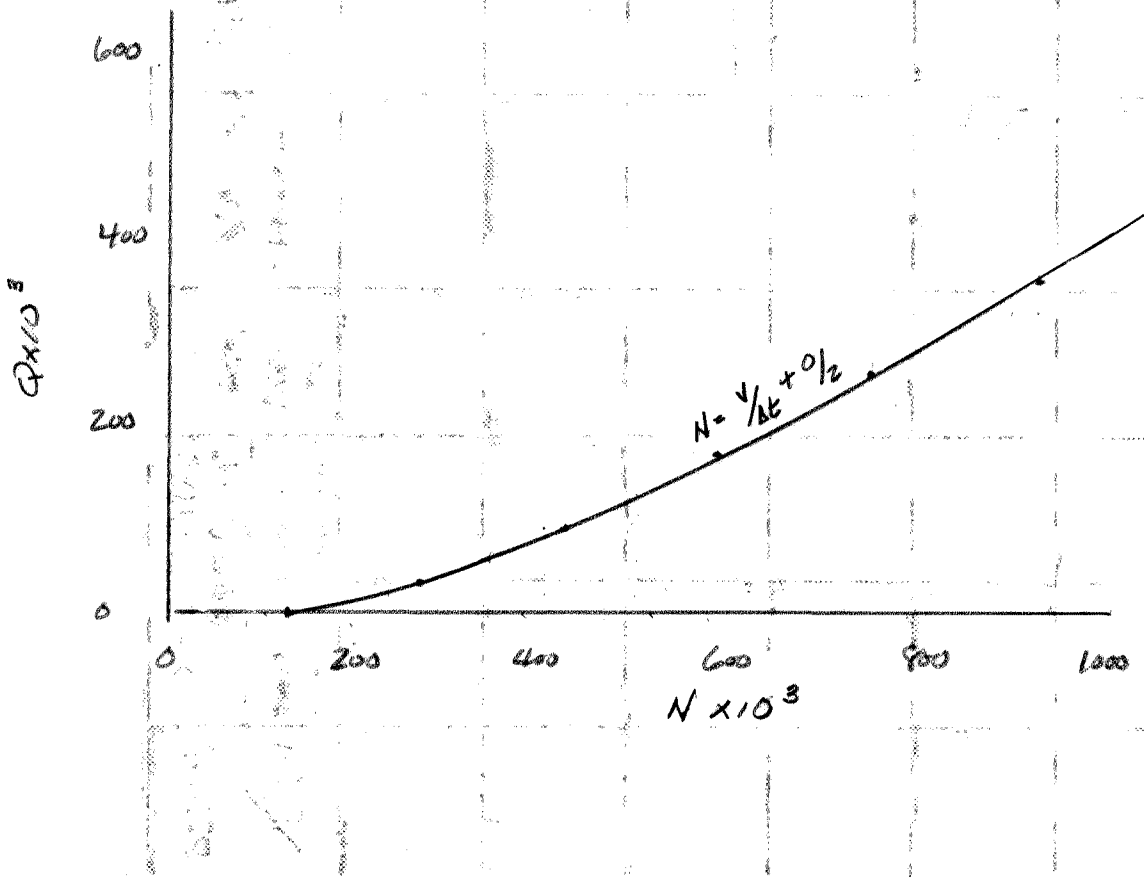
Reservoir - Tennant to San Martin Av.

Area = 37.5 mi^2 x 4.0 x 10^6 = 150 x 10^6 SF

Boundary Weir

$L = 10,300$ $Q = 3.1 L H^{3/2}$

Depth	$d^{3/2}$	H	Q
0		—	
1	1.0	0	0
2	2.83	1	31,900
3	5.20	2	90,300
4	8.00	3	165,900
5	11.18	4	255,300
6	14.70	5	356,600
7	18.52	6	468,900



Storage Volume — N Values

Res. Tennant to San Martin

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area x L	Volume CF-Min x10³	$\frac{V}{\Delta t}$ x10³			REACH Outflow CFS x10³	$N = \frac{V}{\Delta t} + \frac{Q}{2}$		
	Section Upstream	Section Downstream				t=5min	t=10min	t=20min		t=5	t=10	t=2
0					0			0	0			0
1					2500			125	0			125
2					5000			250	32			266
3					7500			375	90			42[illegible]
4					10,000			500	166			583
5					12500			625	255			753
6					15000			750	357			929

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Subject Coyote - Anderson Dams Failure Job No. _____

Tennant to San Martin Res.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1+I_2)$	N $N = \frac{V}{\Delta t} + \frac{O}{2}$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH
0	0	6	0		0	
20	0	95	0	95	0	
40	190	400	95	400	0	
60	610	605	495	480	125	3.3
80	600	480	975	90	390	6.3
100	360	265	1065	-175	440	6.7
120	170	128	890	-212	340	5.8
140	85	68	678	-142	210	4.5
160	50	40	536	-100	140	
180	30	25	436	-75	100	
200	20	10	361	-60	70	
220	10	5	301	-35	40	
240	0		265		30	
260			235	-30	20	
280			215	-20	20	
300			195	-20	10	
320			185	-10	10	

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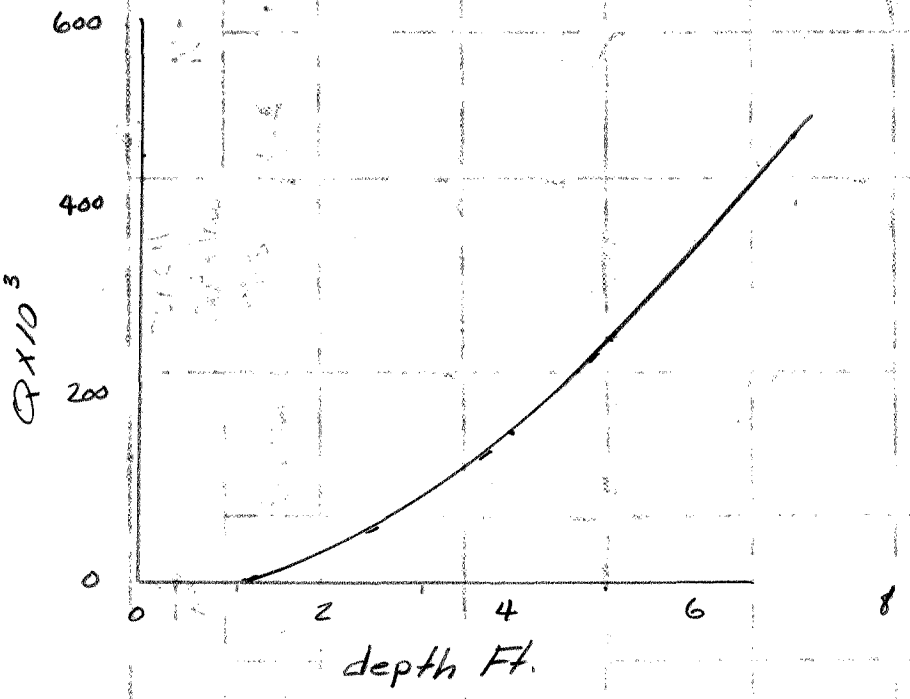

Reservoir San Martin - Buena Vista Av.

Area = 47.5 x 4 x 10^3 = 190 x 10^6 S.F.

Boundary Weir - Buena Vista Av. & Day Rd.

Depth	$d^{8/3}$	H	Q
0		-	
1	1.0	0	
2	2.83	1	48,670
3	5.20	2	137,700
4	8.00	3	253,100
5	11.18	4	389,400

L = 15,700

$Q = 3.1 L H^{3/2}$

Storage Volume — N Values

Res. San Martin to Buena Vista Dr.

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area x L	Volume CF-Min x10³	V/Δt x10³			REACH Outflow CFS	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t=5min	t=10min	t=20min		t=5	t=10	t=2
0					—			—				—
1					3167			158	0			158
2					6333			317	49			342
3					9500			475	138			544
4					12667			633	253			760
5					15833			792	389			987

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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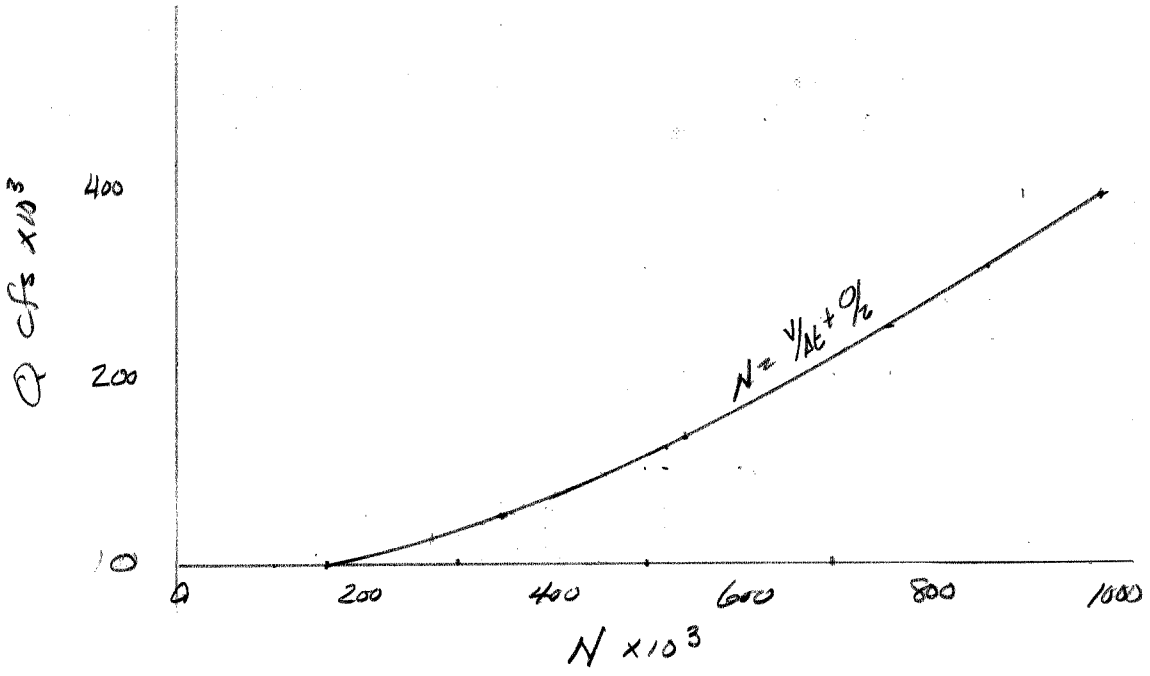

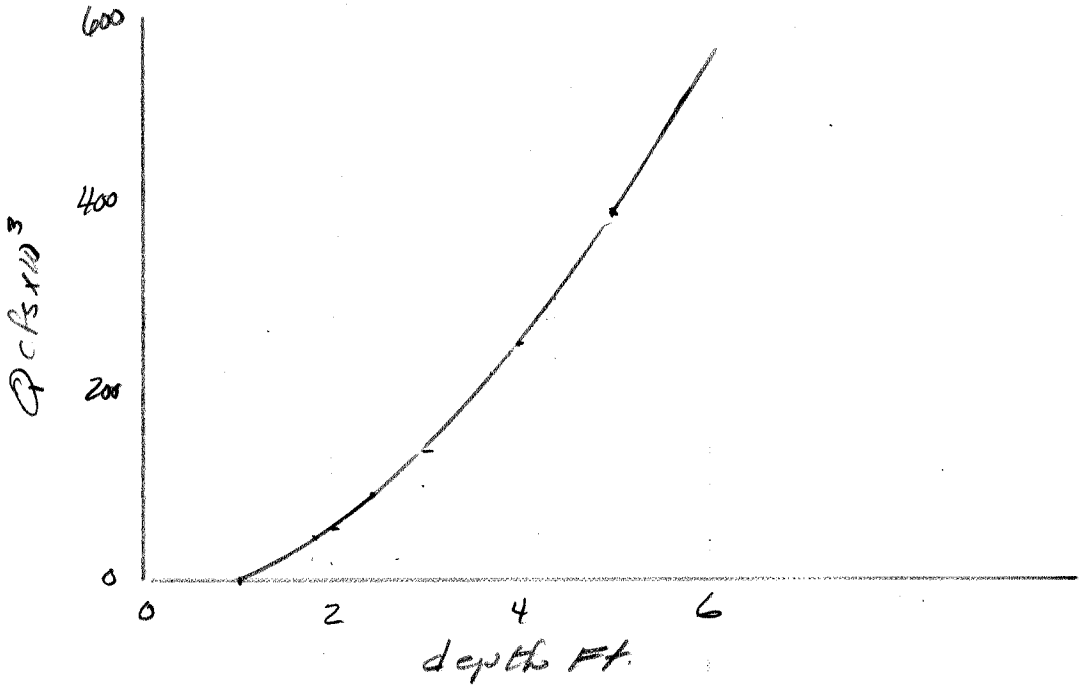

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Subject Coyote Anderson Dam Failure. Job No. _____

Res. San Martin to Bocana Vista Jn.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1+I_2)$	$N = \frac{V}{\Delta t} + \frac{O}{2}$	ΔN $\bar{I}-O$	OUTFLOW "O" cfs	DEPTH
0	0	0			0	
20	0	0	0		0	
40	0	62	0	0	0	
60	125	258	62	62	0	0
80	390	415	320	258	40	1.8
100	440	390	695	375	220	3.7
120	340	275	865	170	320	4.2
140	218	175	820	-45	290	3.9
160	140	120	705	-115	220	3.7
180	100	85	605	-100	170	
200	70	55	520	-85	120	
220	40	35	455	-65	90	
240	30	25	400	-55	70	
260	20	20	355	-45	50	
280	20	15	325	-30	40	
300	10	7	300	-25	30	
320	5		277	-23	25	

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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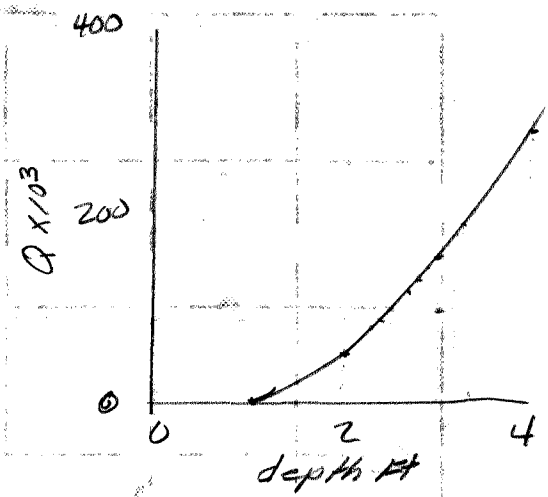
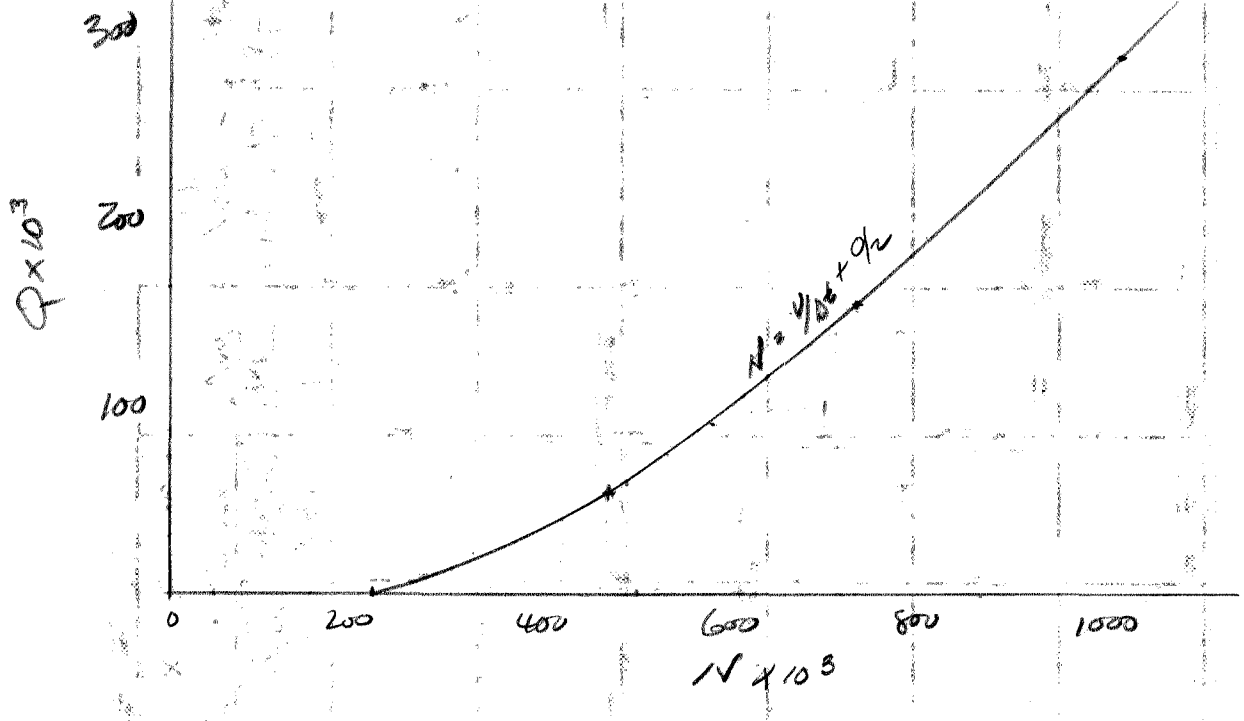
Reservoir Bunea Vista & Day Rd to Et 152 & Thomas Rd.

Area = $65.8 \times 4 \times 10^4 = 263 \times 10^6$ SF

Boundary Weir Et 152 - Thomas Rd L = 17,800

Depth	$d^{3/2}$	H	Q
0	0	0	
1	1.0	0	
2	2.83	1	55,200
3	5.20	2	156,200
4	8.00	3	287,000





Storage Volume – N Values

Res. Buena Vista & Day Rd to Rt 152 & Thomas Rd.

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area × L	Volume CF-Min ×10³	V/Δt			REACH Outflow CFS	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t = 5min	t = 10min	t = 20min ×10³		t = 5	t = 10	t = ×10³
0												
1					4383			219	0			219
2					8767			438	55			466
3					13150			658	156			736
4					17533			877	287			1020

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Subject Coyote - Anderson Dam Failure Job No. _____

Rec. Buena Vista & Day Rd to Rt 152 & Thomas Rd.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	$N = \frac{V}{\Delta t} + \frac{O}{2}$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH
0	0				0	
20	0				0	
40	0				0	
60	0	20	0		0	
80	40	130	20	20	0	
100	220	270	150	130	0	
120	320	305	420	270	40	1.8
140	290	255	685	265	130	2.8
160	220	195	810	125	190	3.3
180	170	145	815	5	190	3.3
200	120	105	770	-45	170	3.1
220	90	80	705	-65	145	2.9
240	70	60	640	-65	120	2.7
260	50	45	580	-60	90	2.2
280	40	35	535	-45	75	
300	30	27	495	-40	60	
320	25	"	462	-33	50	

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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Subject Coyote - Anderson Dam Failure Job No. _____

Reservoir Elev 152 to Pajaro River

Area $87.2 \text{ in}^2 \times 4.0 \times 10^6 = 349 \times 10^6$ SF

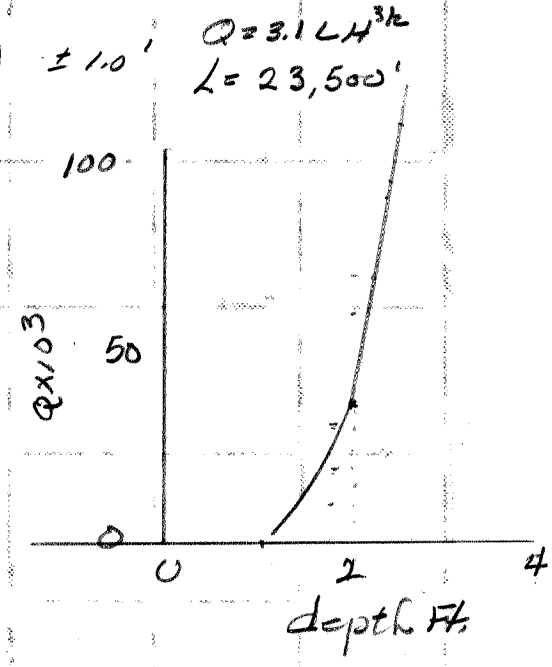
Boundary – Pajaro River

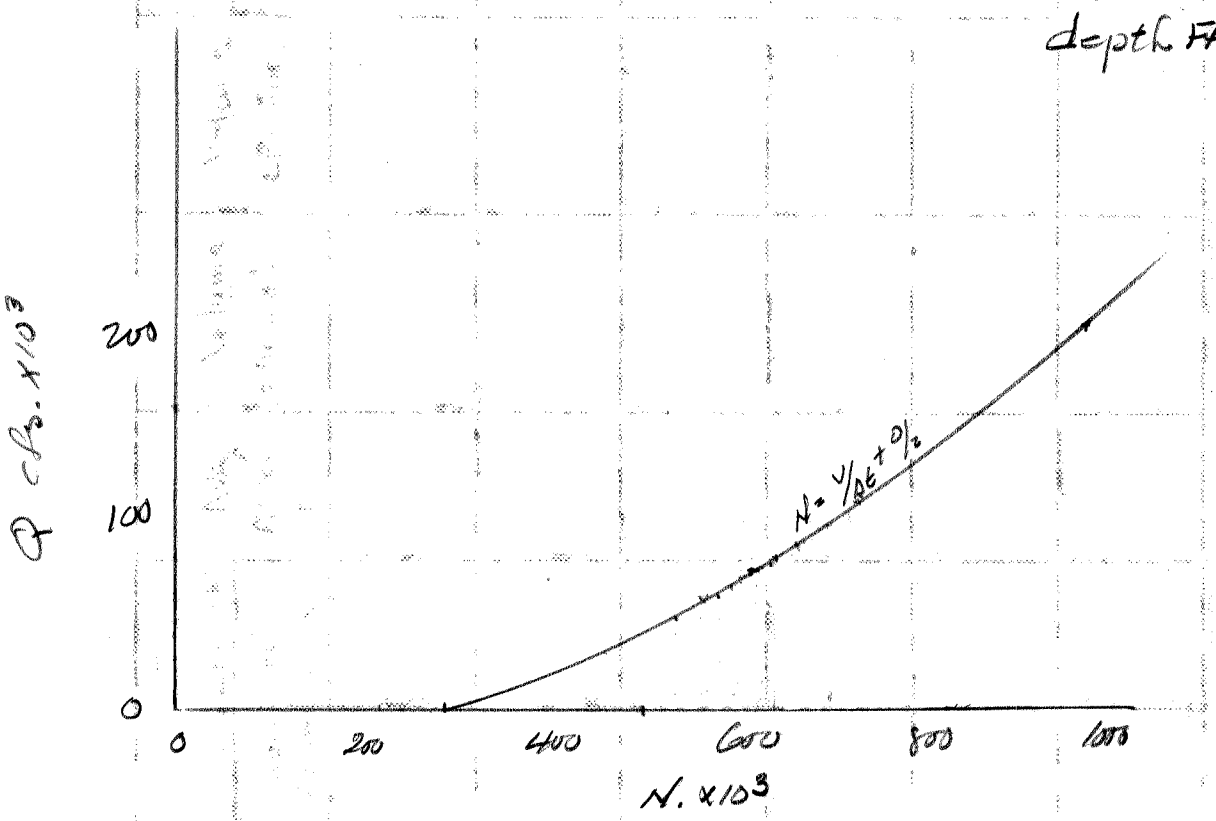
Ave. level h (Santa Clara bank) ± 1.0'

depth	$d^{3/2}$	H	Q
0		–	
1	1.0	0	72,800
2	2.83	1	206,000
3	5.20	2	378,600
4	8.00	3	

$Q = 3.1 L H^{3/2}$

$L = 23,500'$





Storage Volume — N Values

Rea Rt 152 to Pajaro River

DEPTH / ELEV	X-SECTION AREA Ft² Section Upstream	X-SECTION AREA Ft² Section Downstream	Avg Area Ft²	Volume = Area x L	Volume CF-Min x10³	V/Δt t=5min	V/Δt t=10min	V/Δt t=20min x10³	REACH Outflow CFS	N = V/Δt + O/2 t=5	N = V/Δt + O/2 t=10	N = V/Δt + O/2 t=2
0									—			0
1					5816			291	0			291
2					11,633			582	73			618
3					17,450			872	206			975

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SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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Subject Coyote Anderson Dam Failure Job No. _____

Res Rt 152 to Pajaro R.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1+I_2)$	N $N=\frac{V}{\Delta t}+\frac{O}{2}$	ΔN $\bar{I}-O$	OUTFLOW cfs	DEPTH
0 to 100	0	20	0		0	
120	40	85	20	20	0	
140	130	160	105	85	0	
160	190	190	265	160	0	
180	190	180	455	190	30	1.8
200	170	158	605	150	70	2.2
220	145	132	693	88	95	2.4
240	120	105	730	37	110	2.5
260	90	80	725	-5	105	2.4
280	75	67	700	-25	100	2.4
300	60	55	667	-33	85	2.3
320	50	45	637	-30	80	2.3
340	40	35	602	35	70	2.2
360	30	25	567	-35	60	
380	20		532	-35	50	

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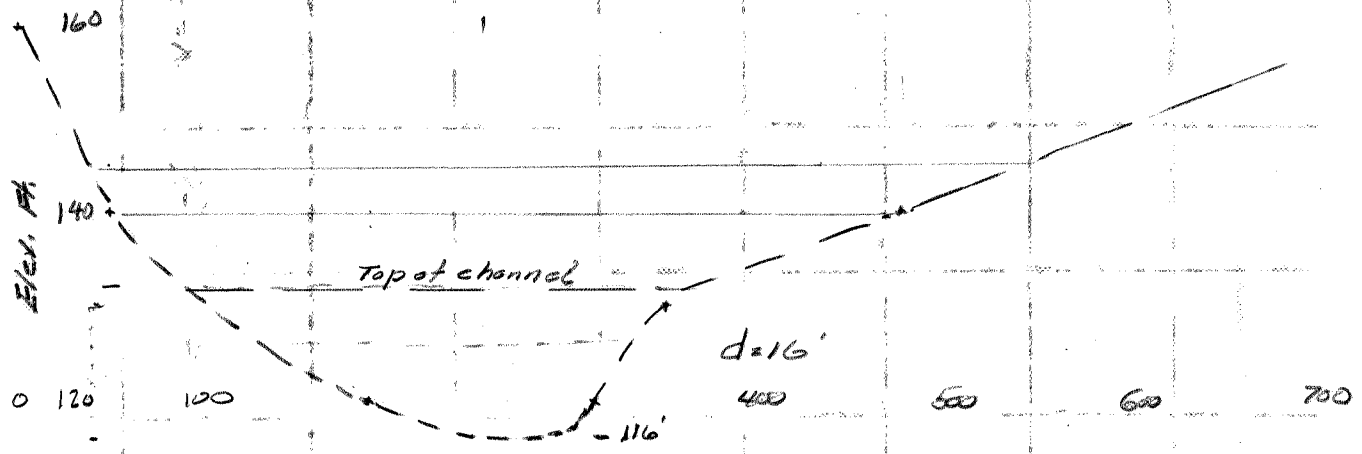
Subject Coyote - Anderson Dam Failure Job No. _____

Pajaro River at Sargent



Capacity at Elev. 132

S = .0005 $S^{1/2}$ = .022

A = 260+50 / 2 x 16 = 2480 SF

P = 300'

R = 2480/300 = 8.27 $R^{2/3}$ = 4.09

n = .03

V = 1.49/.03 x 4.09 x .022 = 4.5'/sec.

Q = 4.5 x 2480 = 11,200 cfs. No Levees.

Col E Interim Flood Control Report - 1963

Capacity of channel in Canyon - No Levees 10,000 cfs.

Outflow at Downstream Channel Section — Mannings Formula

ELEV.	DEPTH	AREA FT^2	WP = T + 2D	$R = \frac{A}{WP}$	$R^{2/3}$	"n"	S	$S^{1/2}$	$V = \frac{1.49}{n} R^{2/3} S^{1/2}$	Q cfs
	0									
132	16'	2480	300	8.27	4.09	.103	.0005	.022	4.5	11,200
140	24	5200	330	15.76.	6.28.	"	"	"	6.9	35,900
145	29	7500	350	21.4	7.71	"	"	"	8.4	63,000

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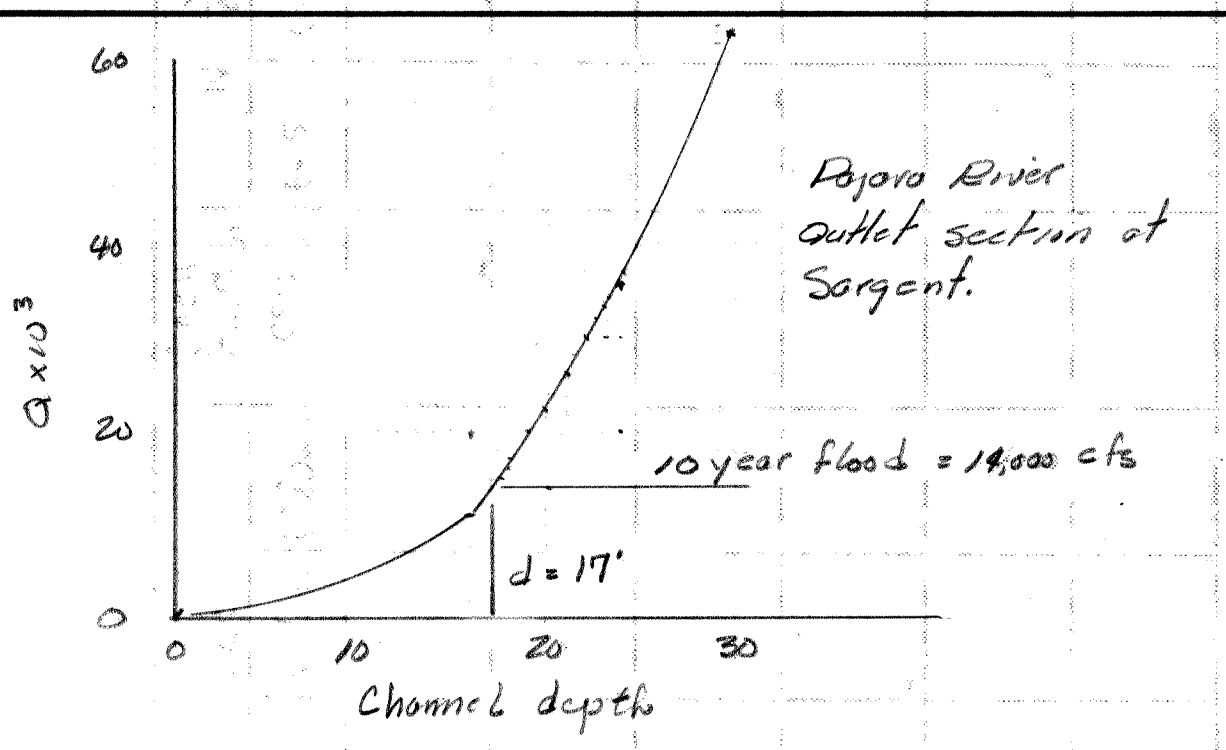
SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 49 of _____

Subject Coyote Anderson Res Job No. _____



d = 17' W.S. El = 133'

Assume bottom of Res. is at Elev. 133'

Storage Volume — N Values

Res. at Pajaro River

DEPTH / ELEV	X-SECTION AREA Ft² Section Upstream	X-SECTION AREA Ft² Section Downstream	Avg Area Ft²	Volume = Area x L	Volume CF-Min X10³	V/Δt t=5min	V/Δt t=10min	V/Δt t=20min X10³	REACH Outflow CFS X10³	N = V/Δt + O/2 t=5	N = V/Δt + O/2 t=10	N = V/Δt + O/2 t=.
0								0	14			7
1 [1]					2000			100	16			108
2					4000			200	20			210
4					8000			400	26			413
6					12,000			600	33			617

Notes. 1) at d=0 discharge = 14,000 cfs Elev = 133'
2) 10 year flood peak 14,000 cfs.

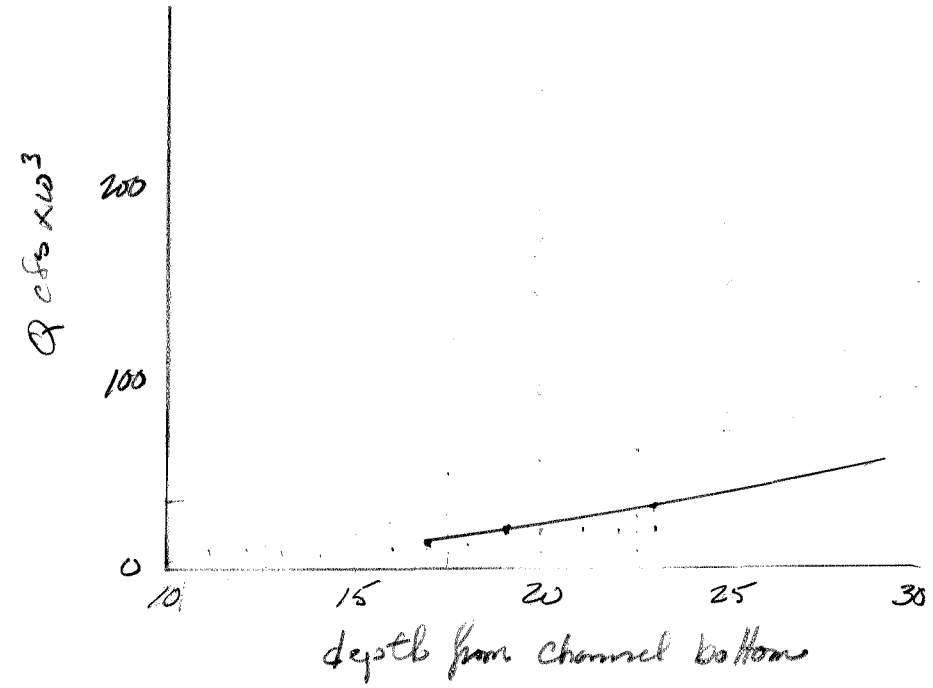
SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

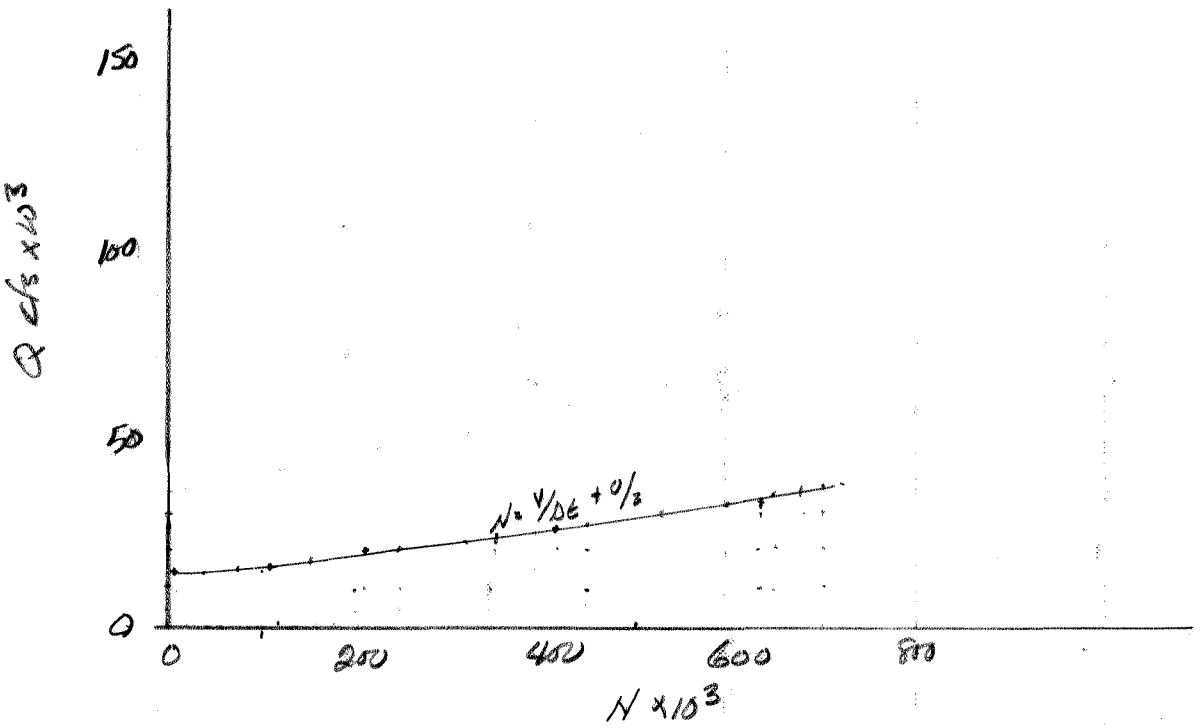
By ERC Date 8-73 Chkd. By _____ Date _____ Sheet No. 51 of _____

Subject Coyote - Anderson Dam Failures Job No. _____

Reservoir Bajoia River to South Boundary

Area = $30 \times 4 \times 10^6 = 120 \times 10^6$ SF





By CASC Date 8-73 Chkd. By _____ Date _____ Sheet No. 52 of _____

Subject Coyote - Anderson Dam Failure Job No. _____

Res at Rojas River

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1+I_2)$	N $N=\frac{V}{\Delta t}+\frac{O}{2}$	ΔN $\bar{I}-O$	OUTFLOW O cfs	DEPTH in Res.
0 to 140	14		7		14	0
160	14	29	7	0	14	0
180	44	64	22	15	14	0
200	84	97	72	50	15	.5
220	109	117	154	82	17	1.0
240	124	122	254	100	20	2.0
260	119	117	356	102	22	3.0
280	114	107	451	95	26	4.0
300	99	92	532	81	30	5.0
320	84	79	594	62	32	5.5
340	74	69	641	47	35	6.0
360	64	59	677	34	36	6.5
380	54	49	700	23	36	6.5
400	44	39	713	13	37	7.0
420	34		715	2	37	7.0

Note: Channel Capacity downstream Sargent 40,000 cfs
Flows remain in channel.

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 53 of _____

Subject Coyote & Anderson Dam Failure Job No. _____

Reach: North of Burnett Ave

Res. Reach - Burnett to Laguna Av.

Area = $52.4 \times 4.0 \times 10^6 = 210 \times 10^6$

Boundary weir - Laguna Av. $L = 11,200$

$Q = 3.1 L H^{3/2}$

depth	$d^{3/2}$	H	Q
0	0	-	-
1	1.0	0	0
2	2.83	1	34,700
3	5.20	2	98,200
4	8.00	3	180,400
5	11.18	4	277,600
6	14.69	5	509,700

Inflow hydrograph

Time	Hills to SPRR.	SPRR to Hills.	Inflow
0	0	0	0
20	120	0	120
40	400	75	475
60	400	130	530
80	270	83	353
100	80	43	123
120	17	10	27
140	15	2	17
160	5	-	5
180	3	-	3
200			

Storage Volume — N Values

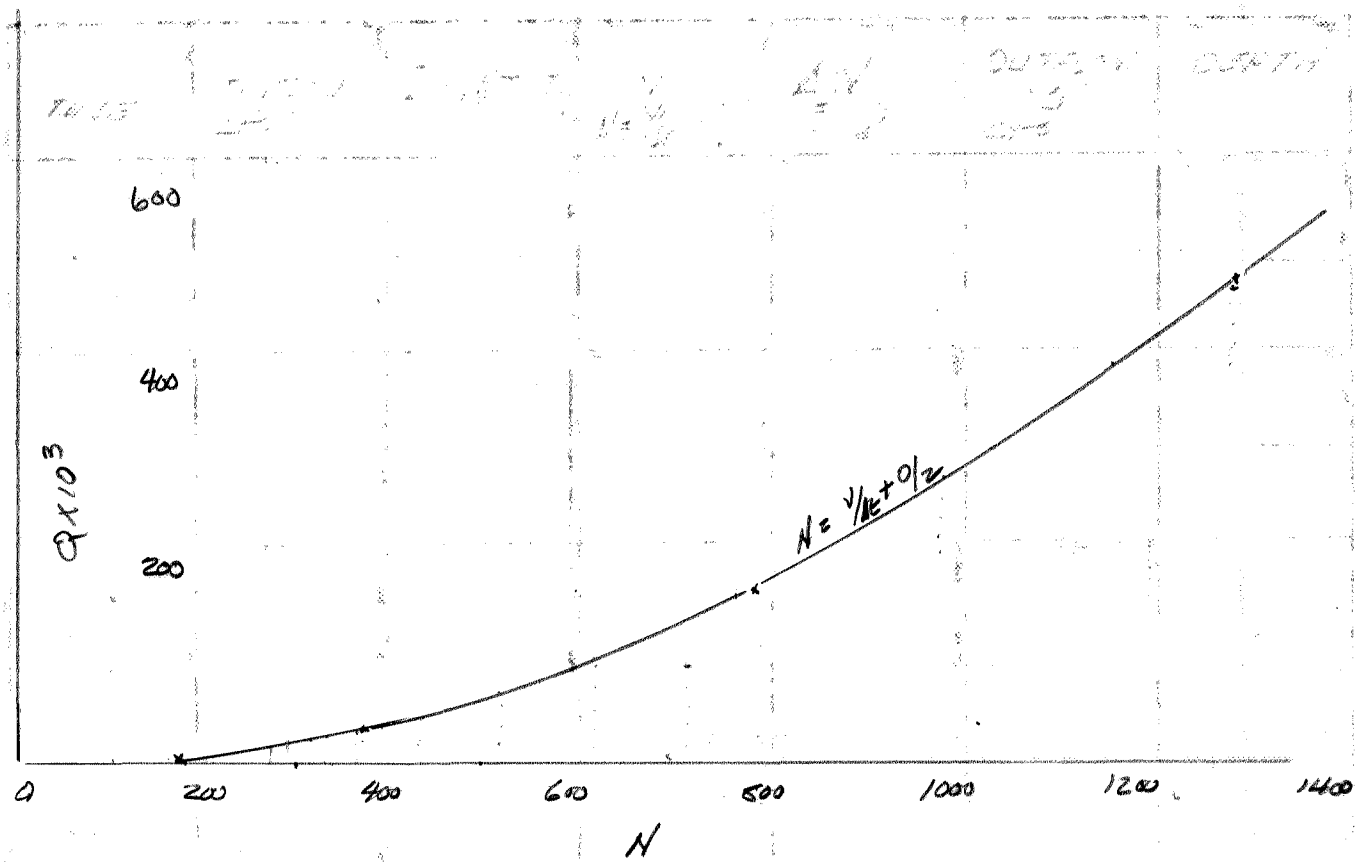
Rea Burnett to Laguna Av.

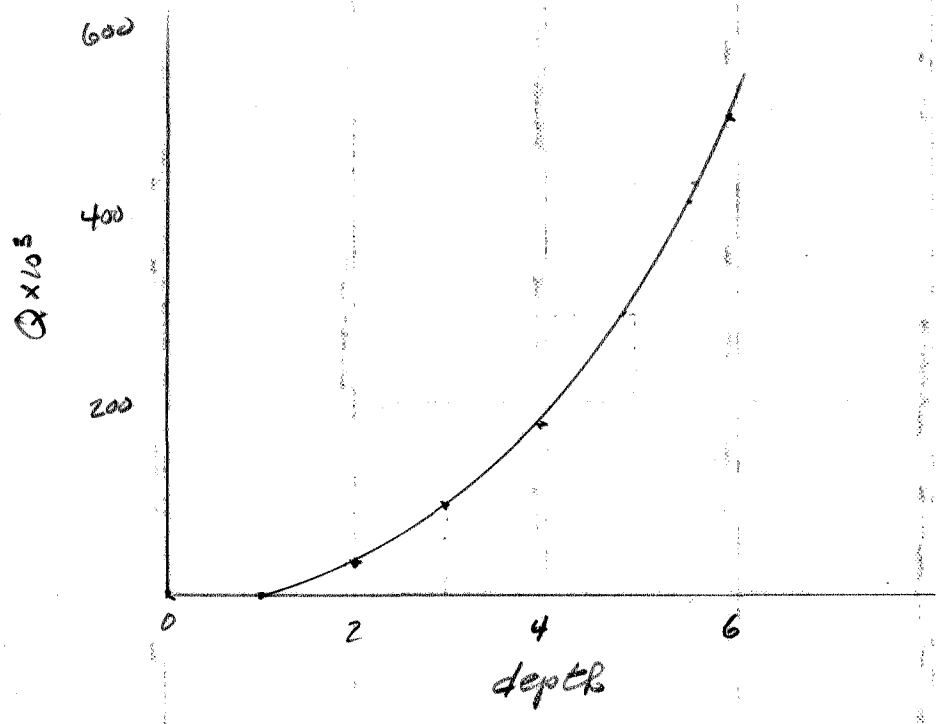
DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area × L	Volume CF-Min ×10³	$\frac{V}{\Delta t}$ ×10³			REACH Outflow CFS	$N = \frac{V}{\Delta t} + \frac{O}{2}$		
	Section Upstream	Section Downstream				t = 5min	t = 10min	t = 20min		t = 5	t = 10	t = ×10³
0					–			–	–			–
1					3500			175	0			175
2					7000			350	35			368
3												
4					14000			700	180			790
5												
6					21,000			1050	510			1305

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CSC Date 8-73 Chkd. By _____ Date _____ Sheet No. 56 of _____

Subject Coyote Anderson Dam Failure. Job No. _____





By CBC Date 8-15 Chkd. By _____ Date _____ Sheet No. 56 of _____

Subject Coyote - Anderson Dam Failure Job No. _____

Res. Branch to Laguna Av.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + \frac{O}{2}$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH
0	0	60	0		0	
20	120	298	60	60	0	
40	475	503	358	298	30	1.9
60	530	542	831	473	200	4.1
80	353	236	1173	342	420	5.6
100	123	75	991	-182	300	4.9
120	27	22	766	-225	170	3.8
140	17	11	618	-148	110	
160	5	4	519	-99	70	
180	3	2	453	-66	50	
200		1	403	-48	40	
220			364	-39	30	
240			334	-30	25	
260			309	-25	20	
280			289	-20	18	
			271	-18	17	

Storage Volume — N Values

2. Res. — Laguna to Metcalf Rd.

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area x L	Volume CF-Min	V/Δt			REACH Outflow CFS	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t=5min	t=10min	t=20min		t=5	t=10	t=
0												0
5					4030			201	22			212
10					8060			403	97			451
15					12,100			605	234			722
20					16,200			810	392			1006
25					20,200			1010	602			1311

Note: 1. Neglect Creek Channel at Metcalf

2. Based on shape of backwater profile upstream of Metcalf (see profile based on Q = 600,000 cfs), assume ½ of storage is available

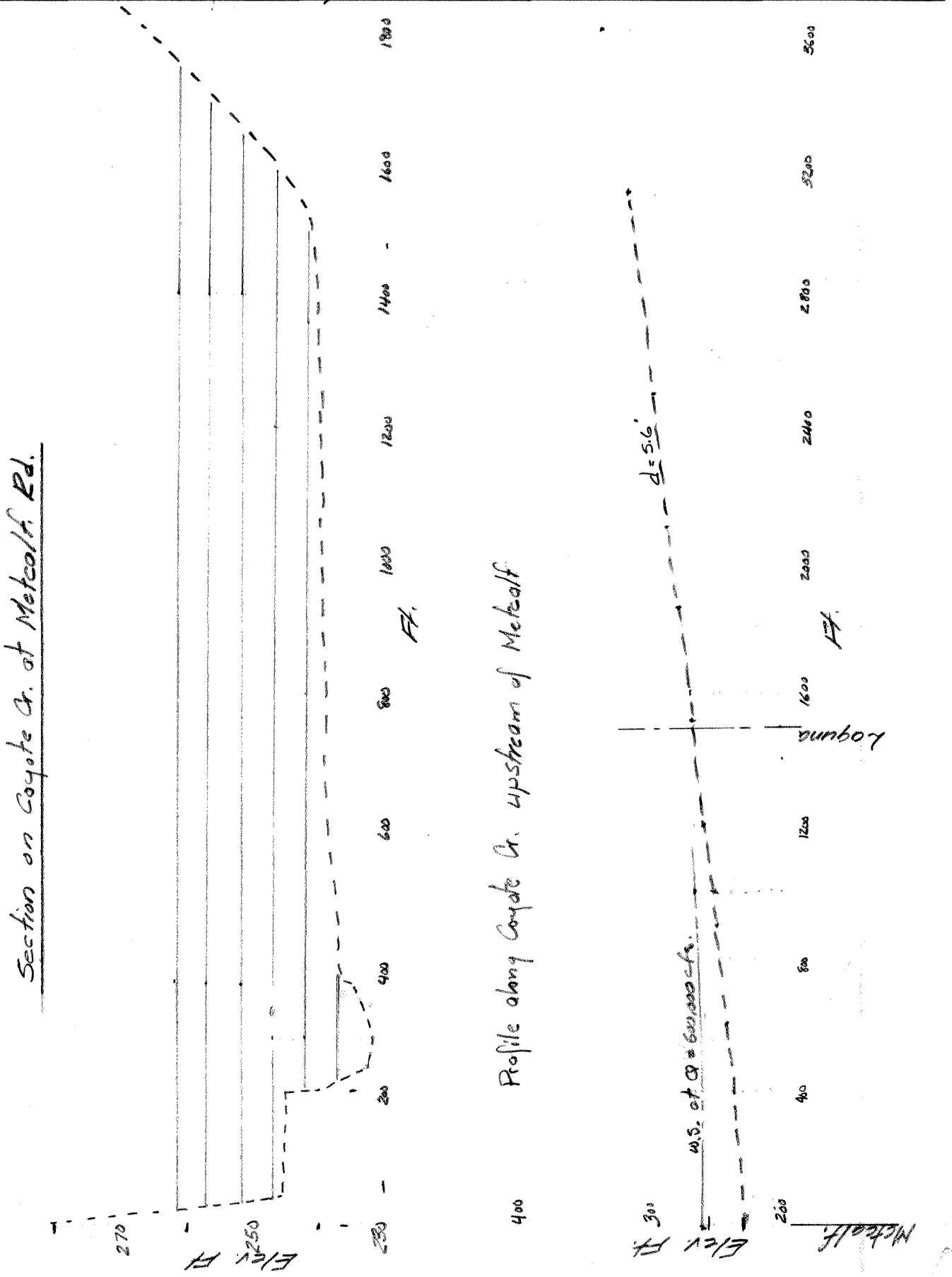
F-1

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 58 of _____

Subject Coyote-Andersons Dam Failure Job No. _____

Res - Laguna to Metcalf Rds.



F-1 SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 59 of _____

Subject Coyote - Anderson Dam Failure Job No. _____

Check depths upstream of Metcalf at Q = 600,000

1. At Metcalf.

d = 30 Elev. 230

V = 20.6 $V^2/2g$ = 6.5 E = 230 + 30 + 6.5 = 266.5'

2. 10,000' upstream

b = 7000' | Q = 600,000 cfs.

V = 4'/sec. | A = 600,000/4 = 150,000

d = 150/7 = 21.4

Neglect $h_f \leq V^2/2g$

253 + 21 = 274

V = 5'/sec A = 600,000/5 = 120,000

d = 120/7 = 17

253 + 17 = 270

V = 7'/sec A = 600,000/7 = 85,700

d = 85.7/7 = 12.2'

253 + 12. = 265

3. 15,000' up stream Elev = 270 b = 12,000'

Outflow at Downstream Channel Section — Mannings Formula

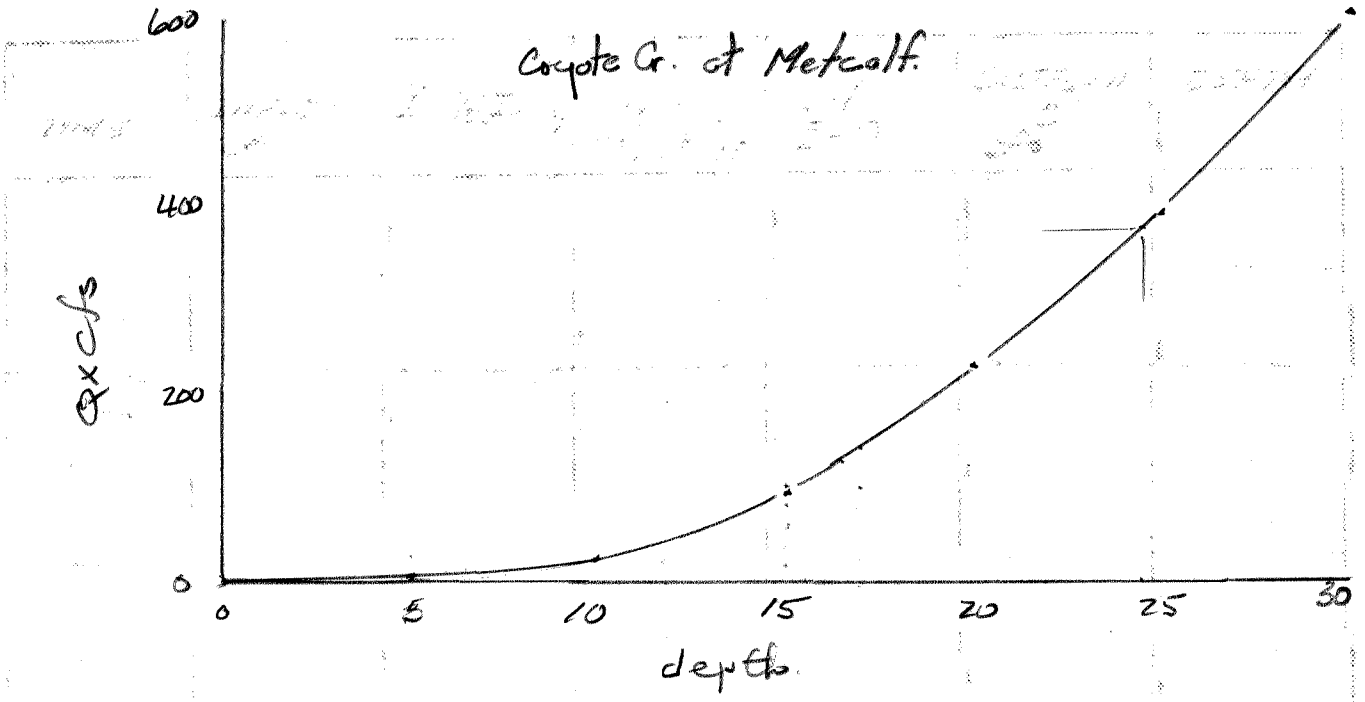
Coyote Cr. at Metcalf. Rd.

ELEV.	DEPTH	AREA FT^2	WP = T + 2D	$R = \frac{A}{WP}$	$R^{2/3}$	"n"	S	$S^{1/2}$	$V = \frac{1.49}{n} R^{2/3} S^{1/2}$	Q cfs
230	0									
	5	575	160	3.59	2.34	.033	.0027	.052	5.49	3200
	10	4475	1320	3.39	2.26	.035	"	"	5.00	22,400
	15	11,625	1580	7.36	3.78	.035	"	"	8.37	97,300
	20	19525	1660	11.76	5.17	.035	"	"	11.45	223,600
	25	27,725	1720	16.12	6.38	.035	"	"	14.12	391,500
	30	36,225	1760	20.58	7.51	"	"	"	16.62	602,100

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

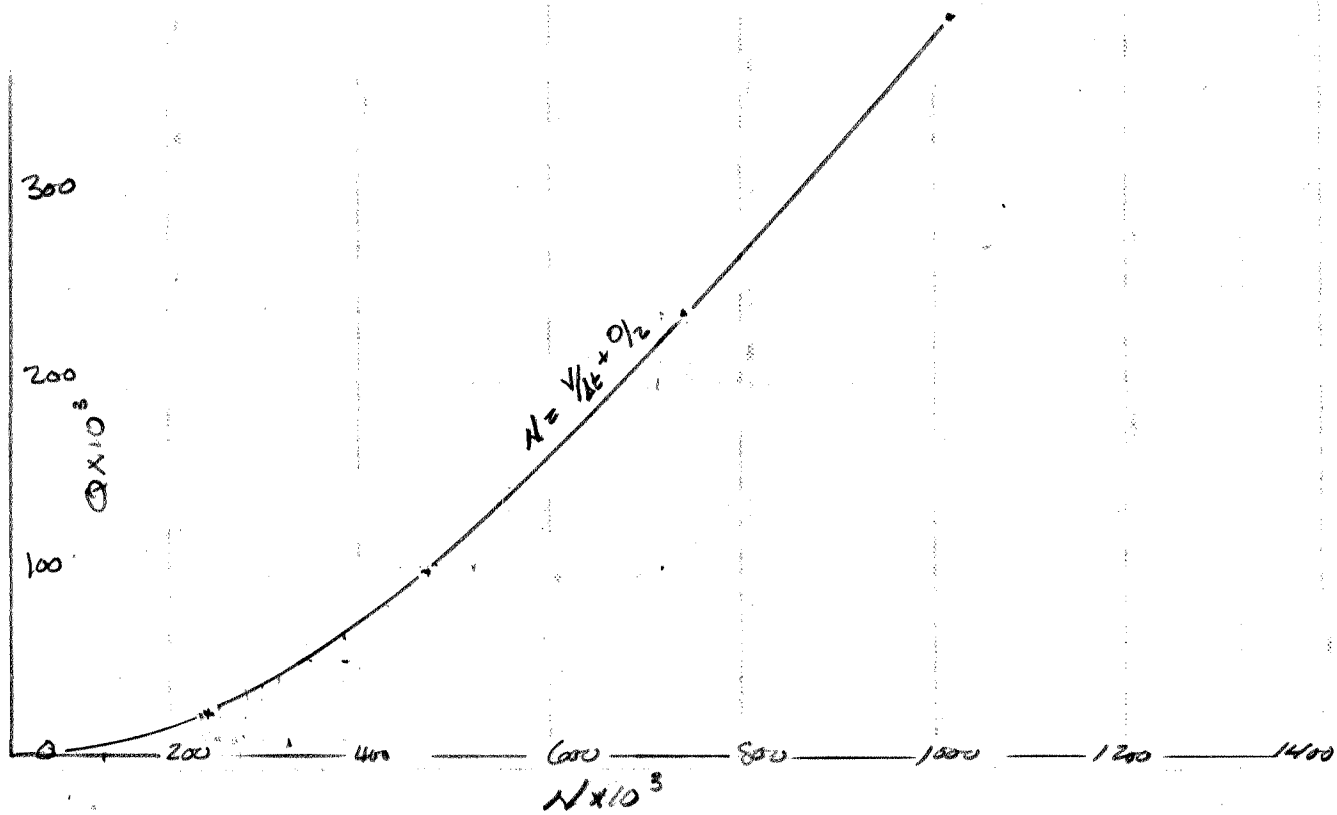
By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 61 of _____

Subject Coyote Anderson Dams Failure Job No. _____



Outflow ± 380,000 cfs
d = ± 24'

Area = 24.2 × 4.0 × 10^6 = 96.8 × 10^6



By CRC Date 8-73 Chkd. By _____ Date _____ Sheet No. 62 of _____

Subject Coyote-Anderson Dam Failure Job No. _____

Res. Laguna to Metcalf Rd.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + O/2$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH at Metcalf
0	0					
20	0	15	0		0	—
40	30	115	15	15	1	—
60	200	310	129	114	10	7
80	420	360	429	300	90	15
100	300	235	699	270	220	20
120	170	140	734	35	235	21
140	110	90	639	-95	190	19
160	70	60	539	-100	140	17
180	50	45	459	-80	100	15.5
200	40	35	404	-55	80	
220	30	27	359	-45	65	
240	25	22	321	-38	50	
260	20	18	293	-28	40	
280	18	15	271	-22	37	
300	17		249	-22	31	
320	16		235	-14	25	

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 63 of _____

Subject Coyote - Anderson Dam Failure Job No. _____

Backwater from Metcalf Rd.

Q = 235,000 cfs. d = 20'
A = 19,500 ft² V = 12.1 $V^2/2g$ = 2.3
HGL = 240 + 12.1 + 2.3 = 254.4'

5,000' upstream
b = 6000' Q = 235,000
V = 3'/sec. A = 235,000/3 = 78,300
d = 78.3/6 = 13.0 Neglect h_f & $V^2/2g$
HGL = 240+13 = 253 - close.

10,000' upstream - Elev. 253
Weir length = 7000' Q = 235,000
$Q = 3.1 \times 7000 \times H^{1.5}$ $H^{1.5} = 10.85$ H = 4.9'

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 64 of _____

Subject Coyote - Anderson Dam Failure Job No. _____

Coyote Cr.

Reservoir Reach - Metcalf to Section Near Rt 101

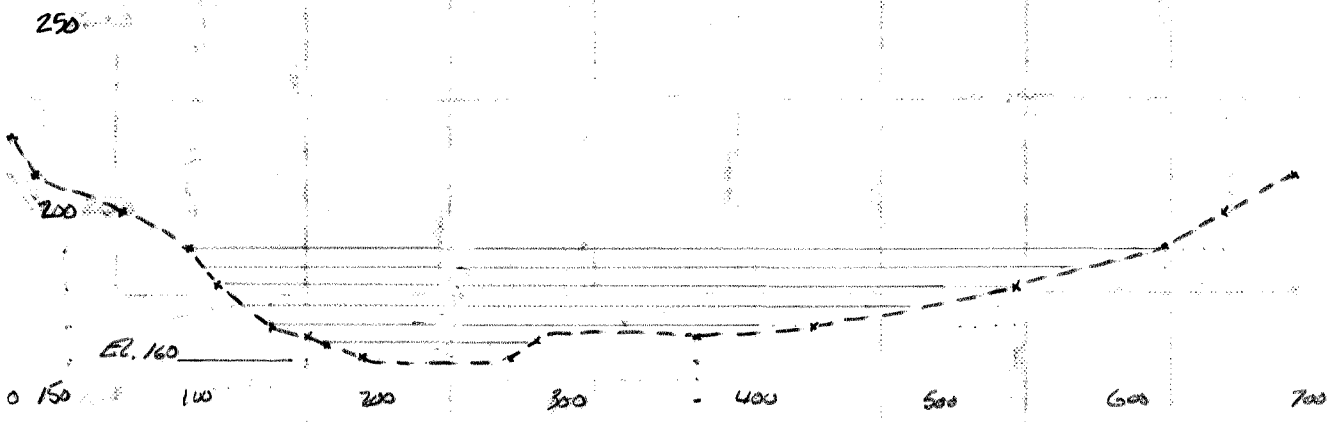
Area = $22.7 \times 4.0 \times 10^6 = 90.8 \times 10^6$

Boundary Weir SPRR $L = 27,200'$ $h = 4'$

$Q = 3.1 L h^{3/2}$

depth	$d^{3/2}$	H	Q
0		0	
1	1.0	0	
2	2.83	0	
3	5.20	0	0
4	8.00	0	0
5	11.18	1	84,300
6		2	238,600

Section Nr. Rt 101



Outflow at Downstream Channel Section — Mannings Formula

Coyote Cr.

Res - Metcalf Rd to Section N. Rt 101 $S = 15/3600 = .004$

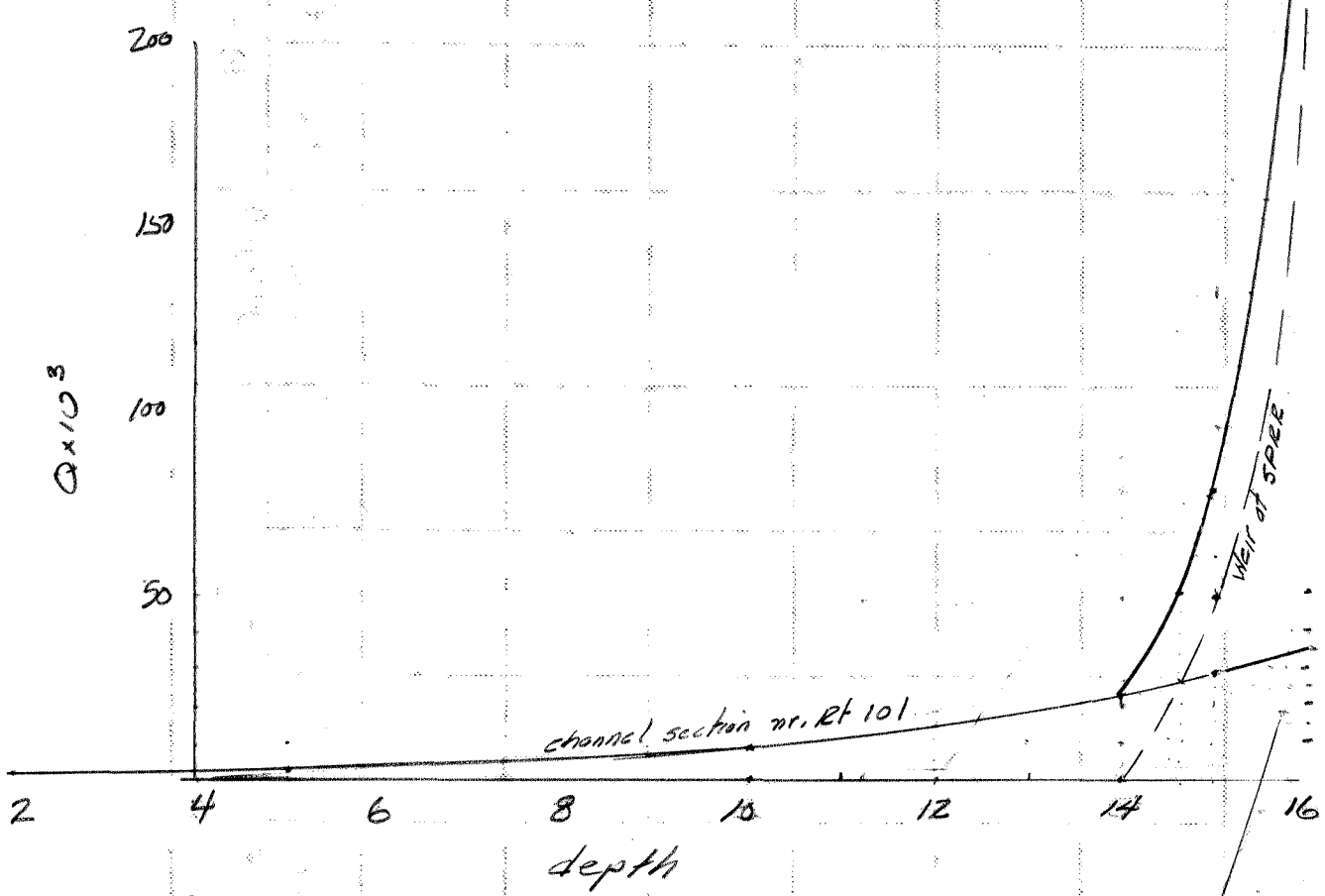
ELEV.	DEPTH	AREA FT^2	WP $= T + 2D$	$R = \frac{A}{WP}$	$R^{2/3}$	"n"	S	$S^{1/2}$	$V = \frac{1.49}{n} R^{2/3} S^{1/2}$	Q cfs
	5	425	120	3.54	2.32	.033	.004	.06	6.3	2700
	10	1200	310	3.87	2.46	"	"	"	6.7	8000
	15	2825	390	7.24	3.74	"	"	"	10.1	28,500

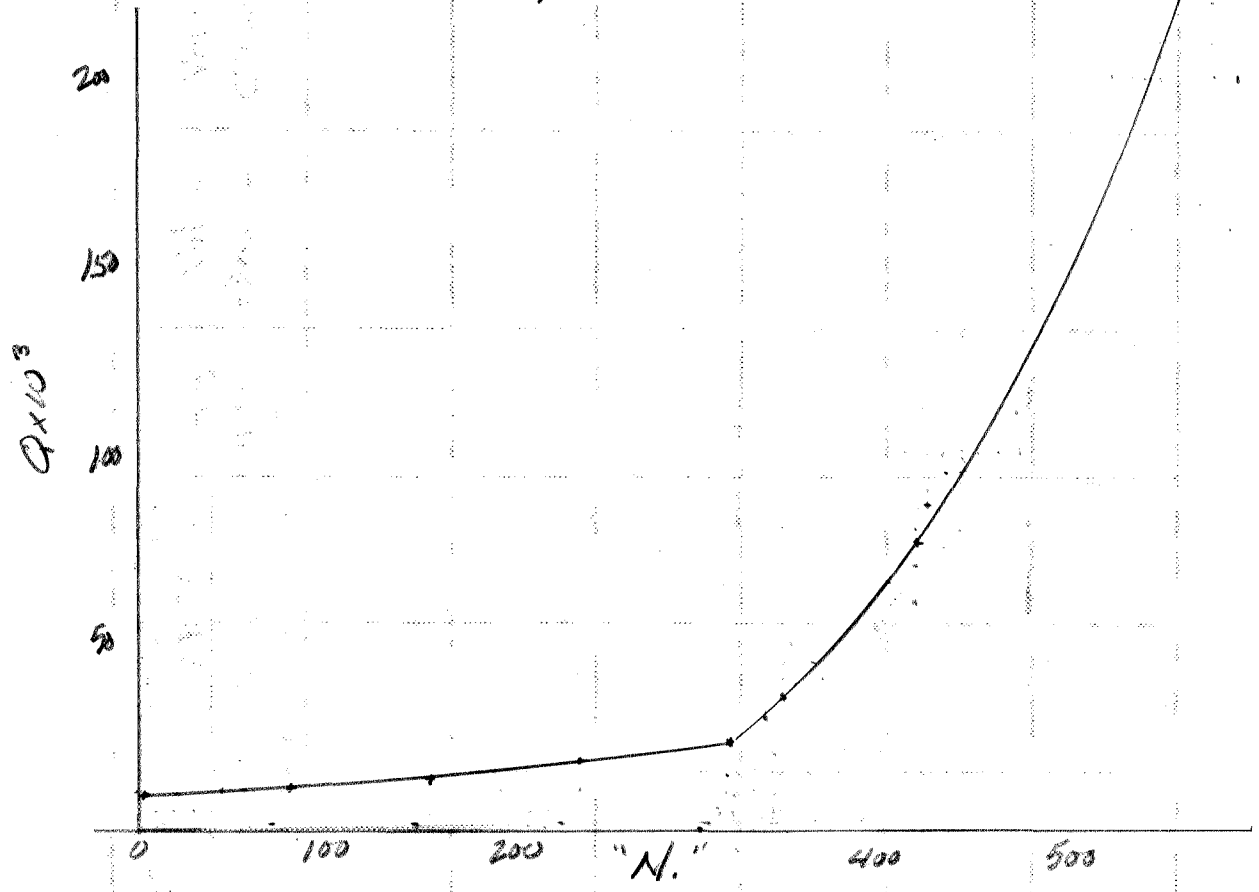
Note Channel $d = 10'$ Channel Capacity = 8000 cfs.

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 46 of _____

Subject Coyote - Anderson Dam Failure Job No. _____





Storage Volume – N Values

Coyote Cr.

Rev. – Metcalf Rd to Section No. Rt 101

DEPTH[1] / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area x L	Volume CF-Min	V/Δt			REACH Outflow CFS	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t = 5min	t = 10min	t = 20min		t = 5	t = 10	t =
Channel Section								–	8			4
1					1513			76	11			81
2					3027			151	14			158
3					4540			227	18			236
4					6053			303	23			315
5					7566			378	77			417
6					9080			454	267			587

[1] depth of water above top of Channel – Channel d = 10'

By CBC Date 8-75 Chkd. By _____ Date _____ Sheet No. 68 of _____

Subject Coyote - Anderson Dam Failure Job No. _____

Coyote Cr.

Rch - Metcalf Rd to Section nr Rt 101

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + O/2$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs $\times 10^3$	DEPTH Channel / Floodplain
0	0	0				
20	0	1	0		0	0 0
40	1	6	1	1	1	3 0
60	10	50	6	5	10	11 1
80	90	155	46	40	11	11 1
100	220	228	190	144	16	12.2 2.2
120	235	212	402	212	67	15.0 5.0
140	190	165	547	145	205	15.8 5.8
160	140	120	507	-40	155	15.6 5.6
180	100	90	472	-35	120	15.4 5.4
200	80	72	442	-30	95	15.1 5.1
220	65	58	419	-23	75	15.0 5.0
240	50	45	402	-17	60	14.8 4.8
260	40	38	387	-15	52	14.6 4.6
280	37	33	363	-14	43	14.4 4.4
300	31		353	-10	39	14.4 4.4
320	25	..	344	-9	36	
240	27		336	-8	32	

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 69 of _____

Subject Coyote - Anderson Dam Failure Job No. _____

Spill to Guadalupe River

Res. SPRR to Snell Av.

Area = $47.5 \times 4.0 \times 10^6 = 190 \times 10^6$ SF

Boundary weir at Snell $L = 15{,}500$

$Q = 3.1 L H^{3/2}$

depth	$d^{3/2}$	H	Q
0		0	
1	1.0	0	
2	2.83	1	47,050
3	5.20	2	249,900
4	8.0	3	
5	11.18	4	

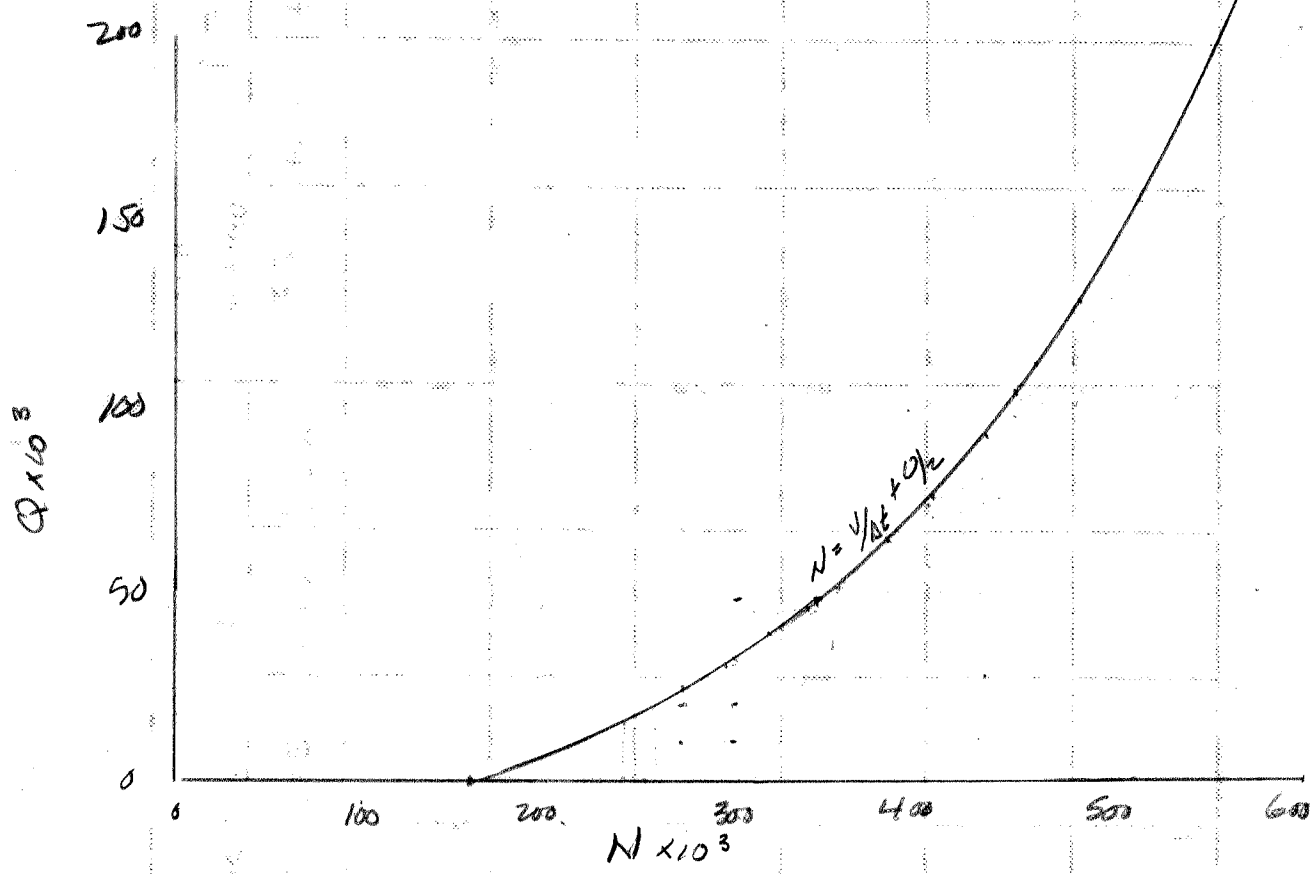
Allocation of Outflow Hyd. from Metcalf to Ethel Res.

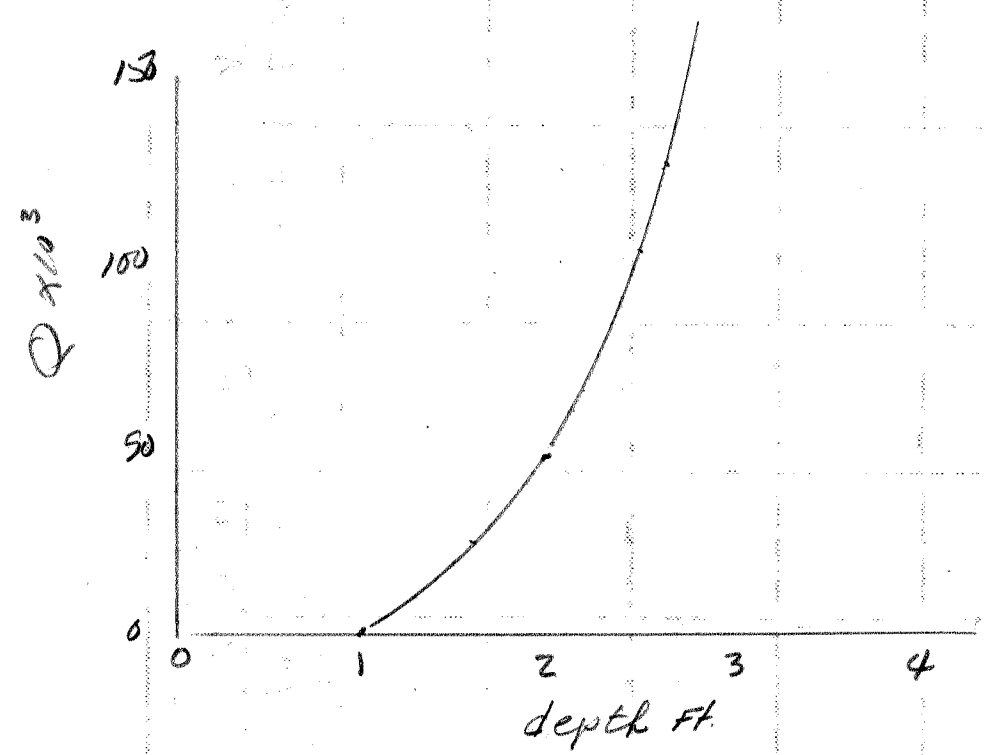
Time	Res. Metcalf to Ethel	Coyote nr. Ethel	Spill SPRR
0	0		0
20	0	0	0
40	1	1	0
60	10	10	0
80	11	11	0
100	16	16	0
120	67	28	39
140	205	33	172
160	155	31	124
180	120	30	90
200	95	29	66
220	75	28	47
240	60	27	33
260	52	26	26
280	43	25	18
300	39	25	14
320	36	24	12
340	30	24	6

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 20 of _____

Subject Coyote Anderson Dam Failure Job No. _____





Storage Volume — N Values

Rec. 5 PRR to Snell — Guadalupe R.

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area x L	Volume CF-Min	V/Δt			REACH Outflow CFS	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t = 5min	t = 10min	t = 20min		t = 5	t = 10	t =
0									0			0
1					3166			158	0			158
2					6333			317	48			341
3					9500			475	250			600

Res SPRR to Snell - Guadalupe R.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + O/2$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH
0 to 80	0					
100	0	20	0		0	
120	39	106	20	20	0	
140	172	148	126	106	0	1.0
160	124	107	274	148	25	1.6
180	90	78	356	82	52	2.0
200	66	57	382	26	65	2.2
220	47	40	374	-8	60	2.1
240	33	30	354	-20	51	2.0
260	26	27	333	-21	44	
280	18	16	316	-17	39	
300	14	13	293	-23	32	
320	12	9	274	-19	25	
340	6	3	258	-16	20	
360	0		241	-17	15	
380			226	-15	12	

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 23 of _____

Subject Coyote - Anderson Dam Failure Job No. _____

Res. Snell Rd to SPRR - Guadalupe R.

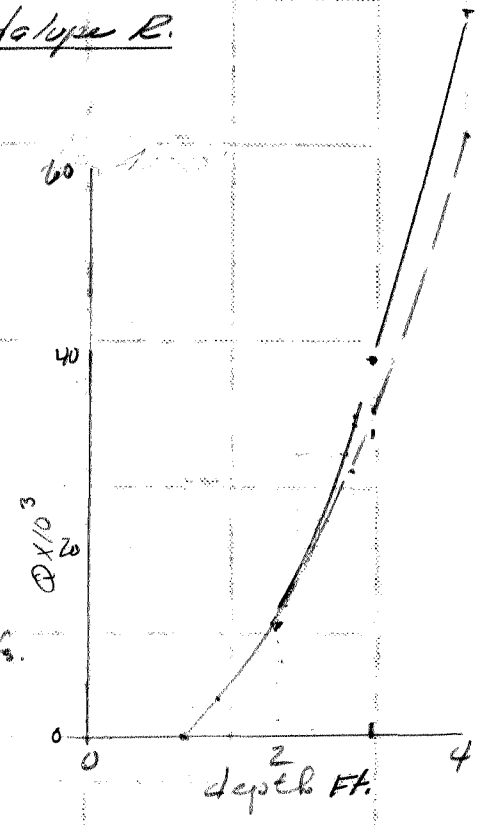
Area $23.4 \times 40 \times 10^4 = 94 \times 10^6$

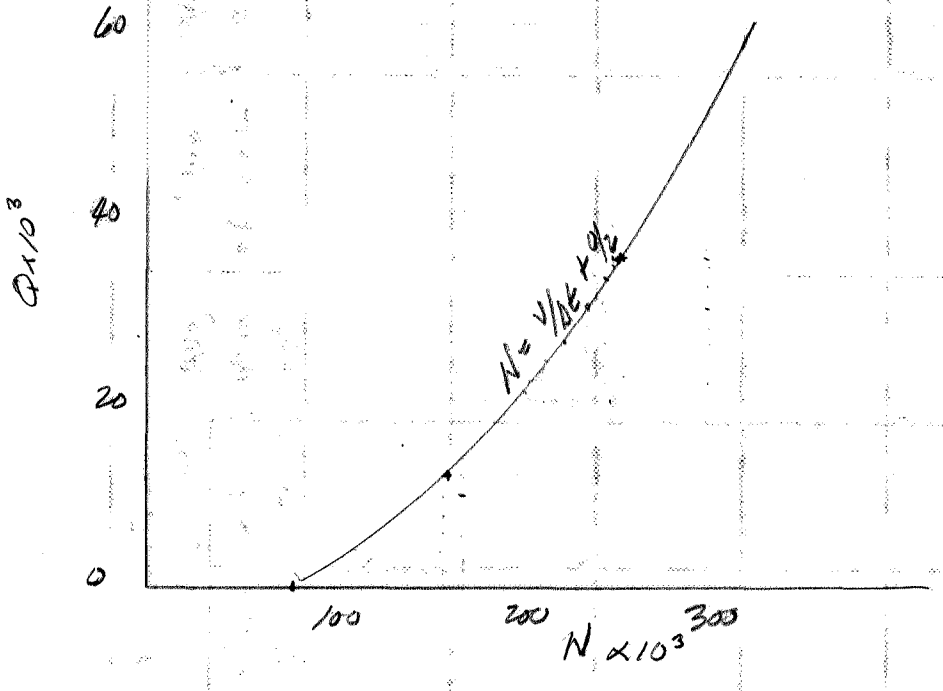
Boundary Weir SPRR L = 4000

depth	d	H	Q
0		0	
1	1.00	0	
2	2.83	1	12,000
3	4.20	2	35,000
4	8.00	3	64,000

$Q = 3.1 L H^{3/2}$

SPRR weir at Monterey Rd d = 1 Q = 4600 cfs.
d = 2 Q = 13,100





Storage Volume — N Values

Res Spill to SPRR — Guadalupe R.

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area × L	Volume CF-Min	V/Δt			REACH Outflow CFS	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t = 5 min	t = 10 min	t = 20 min		t = 5	t = 10	t =
0									0			0
1					1566			78	0			78
2					3133			157	12			163
3					4700			235	40			255
4												

Subject Coyote-Anderson Dam Failure Job No. ____

Res. Snell to SPRR - Guadalupe R.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + \frac{O}{2}$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH
0 to 120	0					
140	0	13	0		0	
160	25	39	13	13	0	
180	52	59	52	39	0	
200	65	63	111	59	4	1.4
220	60	56	170	59	14	2.1
240	51	48	212	42	23	2.2
260	44	42	237	25	30	2.7
280	39	36	249	12	33	2.8
300	32	28	252	3	34	2.8
320	25	23	246	-6	33	2.8
340	20	18	236	-10	30	2.7
360	15		227	-9	28	2.6
380	12		214	-13	24	
400	9		202	-12	22	
420			189	-13	20	

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CBC Date 8-73 Chkd. By _____ Date _____ Sheet No. 76 of _____

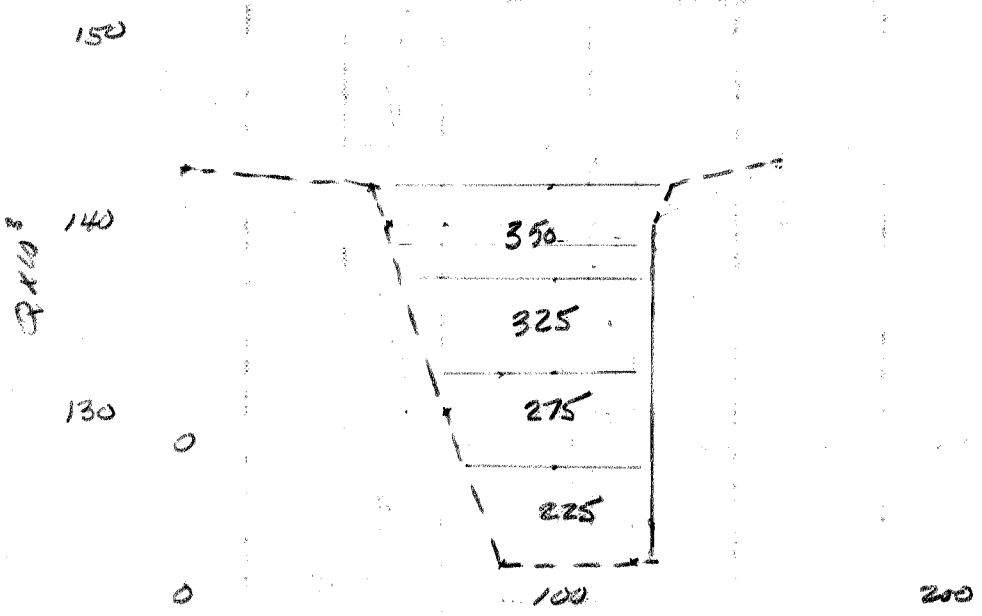
Subject _____ Job No. _____

Res. - Reach SPRR to Curtner - Guadalupe R.

Area $9.9 \times 4.0 \times 10^6 = 40 \times 10^6$ SF

Boundary - Curtner Av.

Section Guadalupe R. at Curtner



Channel Capacity $Q = 1.49/n \, R^{2/3} S^{1/2}$ $n = .035$ $S = .003$

depth	Area	WP	R	$R^{2/3}$	$S^{1/2}$	V	Q
0							
5	225	60	3.75	2.41	.0055	6.0	1400
10	500	80	6.25	3.39		8.4	4200
15	825	100	8.25	4.08		10.1	8400
20	1175	120	9.79	4.58		11.3	13,400

Storage Volume — N Values

Rev SPRR by Curtner - Guadalupe R.

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area × L	Volume CF-Min X10³	V/Δt			REACH Outflow CFS	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t = 5min	t = 10min	t = 20min		t = 5	t = 10	t =
0		—							—			
1					667			33	0			33
2					1333			67	9			72
3					2000			100	48			124

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

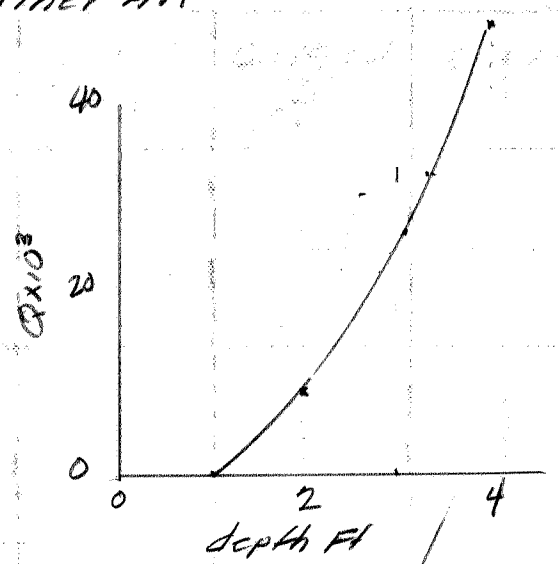
By_____ Date_____ Chkd. By_____ Date_____ Sheet No. 78 of_____

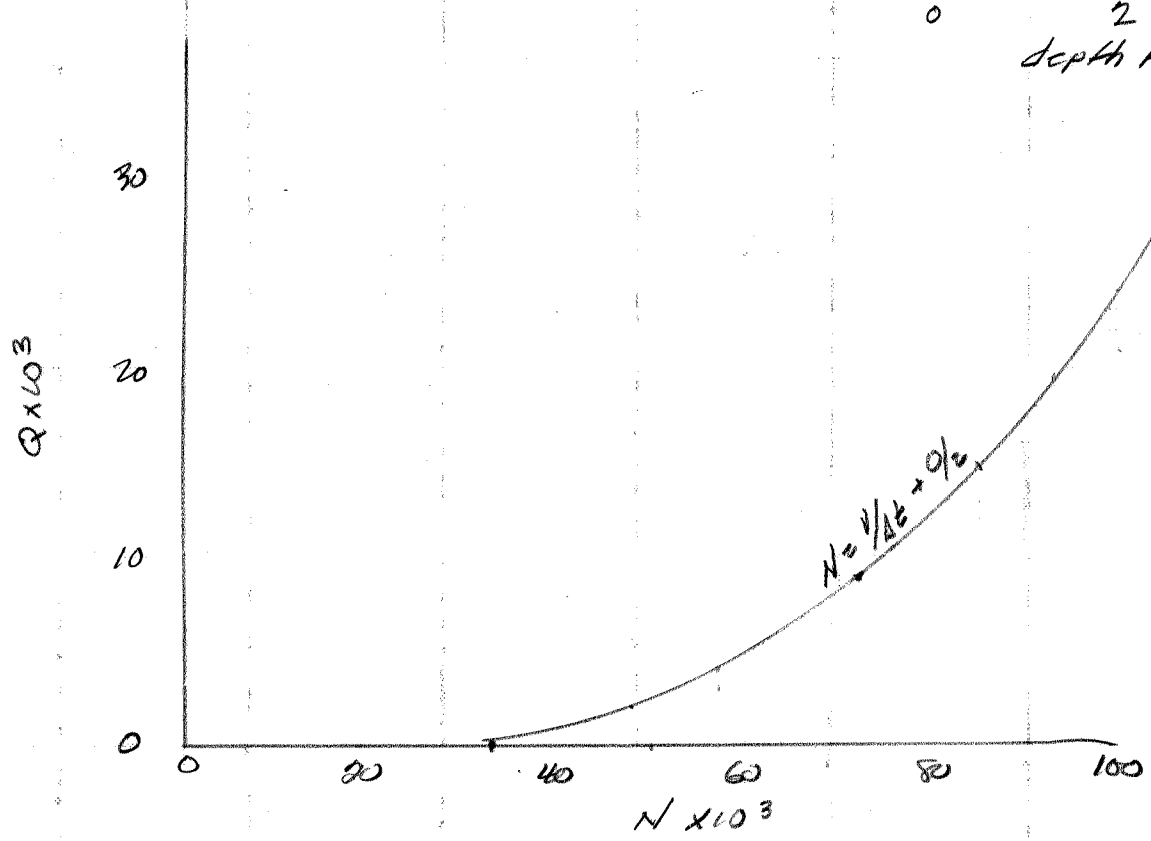
Subject_____ Job No._____

Boundary Weir - Almaden Exp. & Curtner Av.

$L = 3000'$ $Q = 3.1 L H^{3/2}$

depth	$d^{3/2}$	H	Q
0		0	
1	1.00	0	–
2	2.83	1	9300
4	8.0	3	48,400





By CRC Date 6-15 Chkd. By _____ Date _____ Sheet No. 19 of _____

Subject Coyote-Anderson Dam Failure Job No. _____

Res. SPER to Gartner – Guadalupe R.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + \frac{O}{2}$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH
0 to 160	0					
180	0	2	0		0	
200	4	9	2	2	0	
220	14	19	11	9	0	
240	23	27	30	19	0	
260	30	32	57	27	4	
280	33	34	85	28	15	
300	34	33	104	19	27	3.1
320	33	31	110	6	32	3.3
340	30	29	109	-1	32	3.3
360	28	27	106	3	29	3.2
380	24	23	104	-2	27	3.1
400	22	21	100	-4	24	
420	20	19	97	-3	23	
440	18	17	93	-4	20	
460			91	-2	18	

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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Subject Coyote - Anderson Dam Failure Job No. _____

Outflow Hyd. - Almaden Exp & Camden

ratio $\frac{7}{30} = .23$

Time	Overflow to Guad Cr. L=2300	Overflow at Cortner L= 700	Total
			0
0 to 240			0
260	3	1	4
280	12	3	15
300	21	6	27
320	25	7	32
340	25	7	32
360	22	7	29
380	21	6	27
400	18	6	24
420	18	5	23
440	15	5	20
460	14	4	18

Note: Channel Capacity Guadalupe R. d = 20' Q = 13,400 cfs

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

By CBC Date 8-73 Chkd. By Date Sheet No. 81 of

Subject Coyote - Anderson Dam Failure Job No.

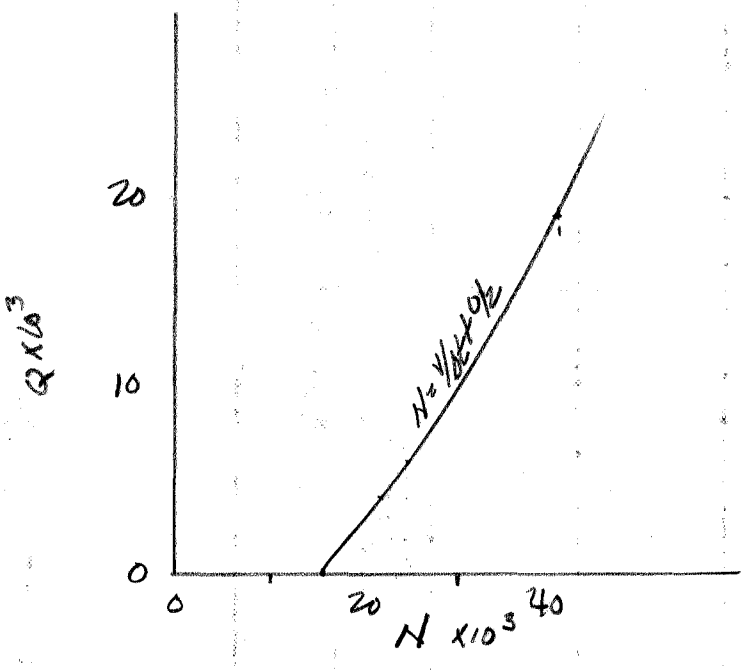
Overflow at Cartner.

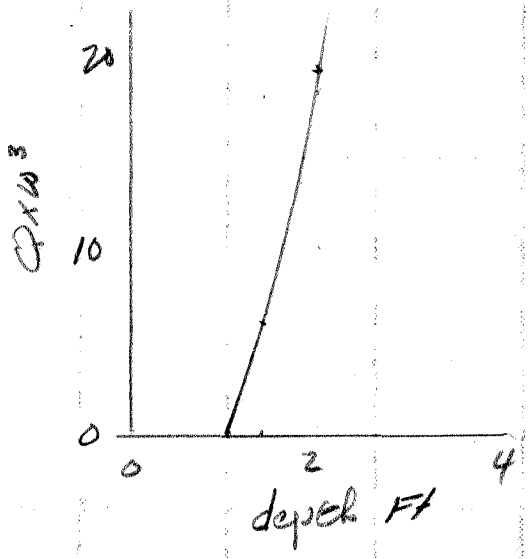
Q_{max} = 7000 cfs.

Res. Area $4.8 \times 4.0 \times 10^6 = 19.2 \times 10^6$ SF

Boundary Weir W.P.R.R. L = 6000

depth	$d^{3/2}$	H	Q
0		–	0
1	1.0	0	0
2	2.83	1	18,600
3	5.20	2	52,600
4	8.00	3	





Storage Volume — N Values

Spill Post Curtner

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area x L	Volume CF-Min	V/Δt			REACH Outflow CFS	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t=5min	t=10min	t=20min		t=5	t=10	t=
0									0			0
1					320			16	0			16
2					640			32	19			41

By CTSC Date 8/75 Chkd. By _____ Date _____ Sheet No. 62 of _____

Subject Coyote-Anderson Dam Failure Job No. _____

Spill past Curtner

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1+I_2)$	N $N=\frac{V}{\Delta t}+\frac{O}{2}$	ΔN $\bar{I}-O$	OUTFLOW O cfs	DEPTH
0 to 240	0	1	0		0	
260	1	2	1	1	0	
280	3	5	3	2	0	
300	6	7	8	5	0	
320	7	7	15	7	0	
340	7	7	22	7	4	1.2
360	7	6	25	3	6	1.4
380	6	6	25	0	6	1.4
400	6	5	25	0	6	1.4
420	5	5	24	-1	5	1.3
440	5	4	24	0	5	1.3
460	4	4	23	-1	5	1.3
480	4	3	22	-1	4	1.2
500			21	-1	3	1.2
300 Min	at hr. 0 = 4 cfs.					
5/24 × 8 = 1.7 HF		d = 1.0	Area = 1.7 Ac.			

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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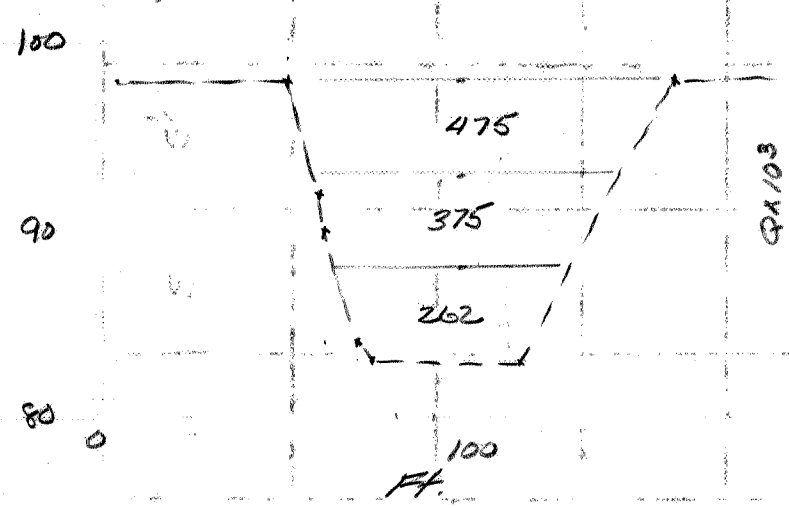
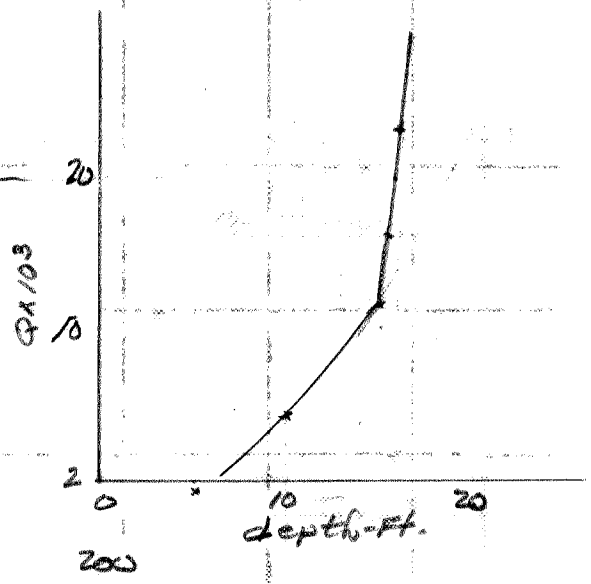
Subject Coyote Anderson Dam Failure Job No. _____

Guadalupe R. - Bach Curtner to W. Virginia St.

Res. Area $8.0 \times 4 \times 10^6 = 32 \times 10^6$ S.F.

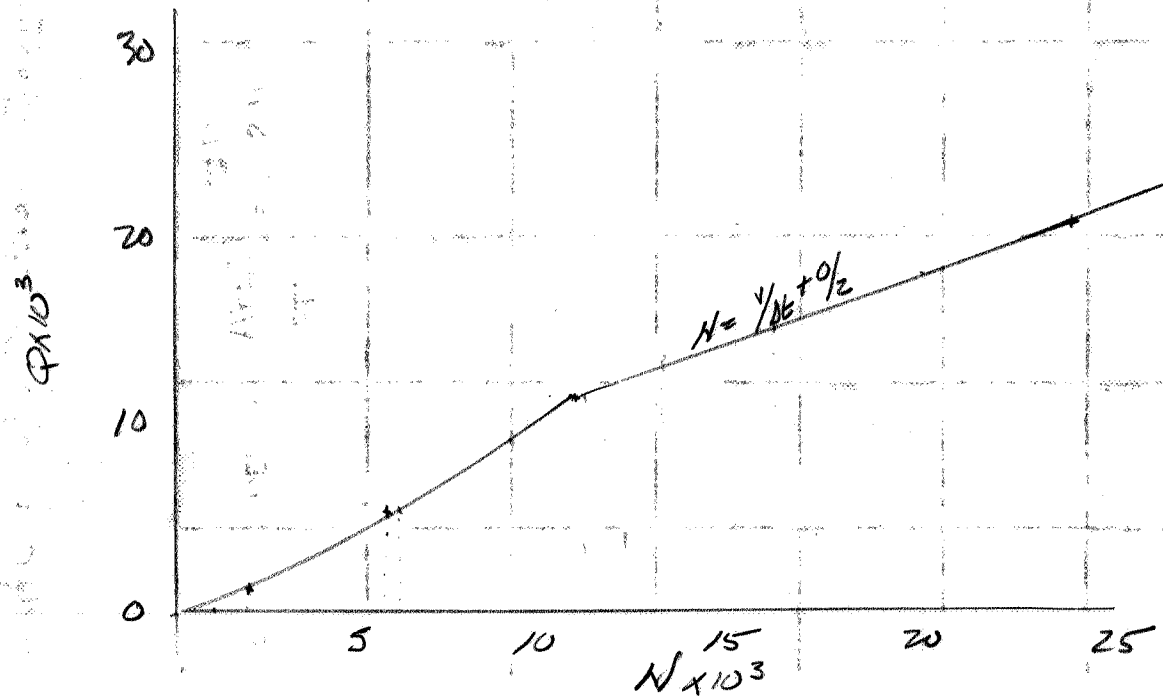
Channel Section at W. Virginia St.





Weir at W. Virginia St $L = 3000$ $Q = 3.1 L H^{3/2}$

H	$H^{3/2}$	Q
1.0	1.0	9300



Outflow at Downstream Channel Section — Mannings Formula

Guadalupe R. Curtner to W. Virginia St.

ELEV.	DEPTH	AREA FT^2	WP $=T+2D$	$R=\frac{A}{WP}$	$R^{2/3}$	"n"	S	$S^{1/2}$	$V=\frac{1.49}{n}R^{2/3}S^{1/2}$	Q cfs
	0									
	5	262	75	3.49	2.3	.033	.003	.055	5.7	1200
	10	637	105	6.06	3.33	"	"	"	8.3	5300
	15	1112	135	8.24	4.08	"	"	"	10.1	11,300
	16	"	"	"	"	"	"	"	"	11,300 + 9300 20,600 cfs.

Storage Volume — N Values

L = 12,400'

Res. - Cartner to W Virginia - Guadalupe R.

DEPTH / ELEV	X-SECTION AREA Ft² Section Upstream	X-SECTION AREA Ft² Section Downstream	Avg Area Ft²	Volume = Area x L	Volume CF-Min	V/Δt t=5min	V/Δt t=10min	V/Δt t=40min X10³	REACH Outflow CFS	N = V/Δt + O/2 t=5	N = V/Δt + O/2 t=10	N = V/Δt + O/2 t=
0												
5	262	225	244	3025	50.4			1.3	1.2			1.9
10	637	500	569	7056	117.6			2.9	5.3			5.6
15	1112	825	968	12,000	200			5.0	11.3			10.7
16	1112	1175	968	32,970	549			13.7	20.6			24.0

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Subject Coyote-Anderson Dam Failure Job No. _____

Res. Curtner & W. Virginia - Guadalupe R.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + \frac{O}{2}$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH
6 to 240	0	6	0		0	
280	12	19	6	6	5	
320	25	24	20	14	18	15.9
360	22	20	26	6	22	16.2
400	18	17	24	-2	21	16.0
440	15	14	20	-4	18	15.9
48	13	12	16	-4	15	
520	12	11	13	-3	13	
560	11	10	11	-2	12	
600			9	-2	9	

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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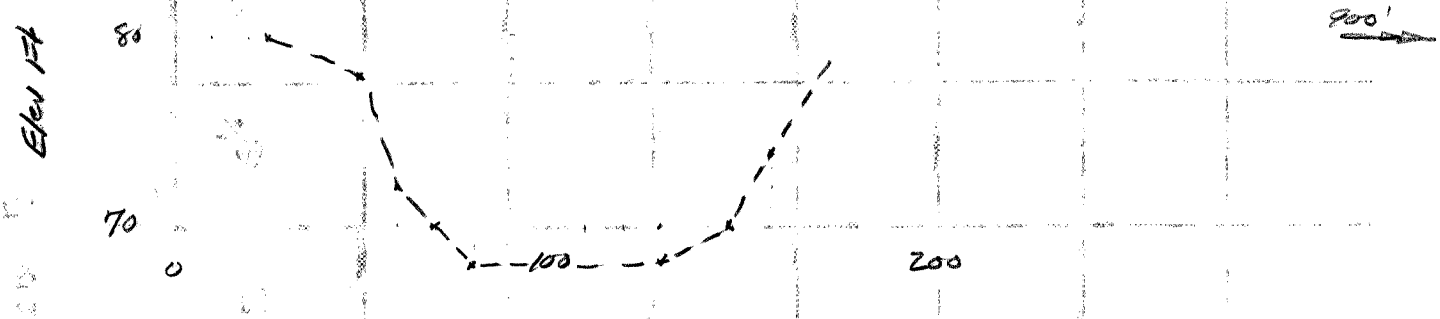
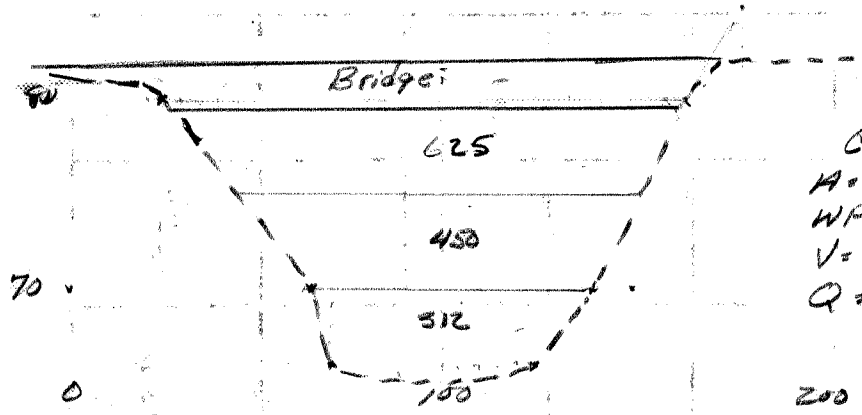
Res. W. Virginia to Julian St. - Guadalupe R.

Section nr. Julian St.



Section at Julian St.



Capacity
A = 1387 S = .002
WP = 170 R = 8.15 $R^{2/3}$ = 4.05
V = 45.15 x 405 x .045 = 8.2
Q = 11,000 cfs.

Weir Section - Julian St. L = 1700 $Q = 3.1 L H^{3/2}$

H	$H^{3/2}$	Q
1.0	1.0	5300

Res. Area $3.5 \times 4.0 \times 10^6 = 14 \times 10^6$

Max Q = 18,000 cfs. channel Cap. = 11,000 cfs

Outflow at Downstream Channel Section — Mannings Formula

W. Virginia to Toliani - Guadalupe R.

ELEV.	DEPTH	AREA FT^2	WP = T + 2D	$R = \frac{A}{WP}$	$R^{2/3}$	"n"	S	$S^{1/2}$	$V = \frac{1.49}{n} R^{2/3} S^{1/2}$	Q cfs
	0	-	—							0
	5	312	85	3.76	2.37	.1033	.002	.045	4.8	1500
	10	762	130	586	3.25	"	"	"	6.6	5000
	15	1387	170	8.15	4.05	"	"	"	8.23	11,400

Storage Volume — N Values

L = 7000'

W. Virginia to Juliani – Guadalupe R.

DEPTH / ELEV	X-SECTION AREA Ft² Section Upstream	X-SECTION AREA Ft² Section Downstream	Avg Area Ft²	Volume = Area x L x10³	Volume CF-Min x10³	V/Δt t=5min	V/Δt t=10min	V/Δt t=40/20min x10³	REACH Outflow CFS	N = V/Δt + O/2 t=5	N = V/Δt + O/2 t=10	N = V/Δt + O/2 t=4/.4 x10³
0									0			
5	312	262	287	2009	33.5			.84	1.5			1.6
10	762	637	700	4900	68.8			1.72	5.0			4.2
15	1387	1112	1250	8750	145.8			3.65	11.4			9.3
17	1387	1112	1250	8750 / 28,000	612.5			15.31	16.7			23.6

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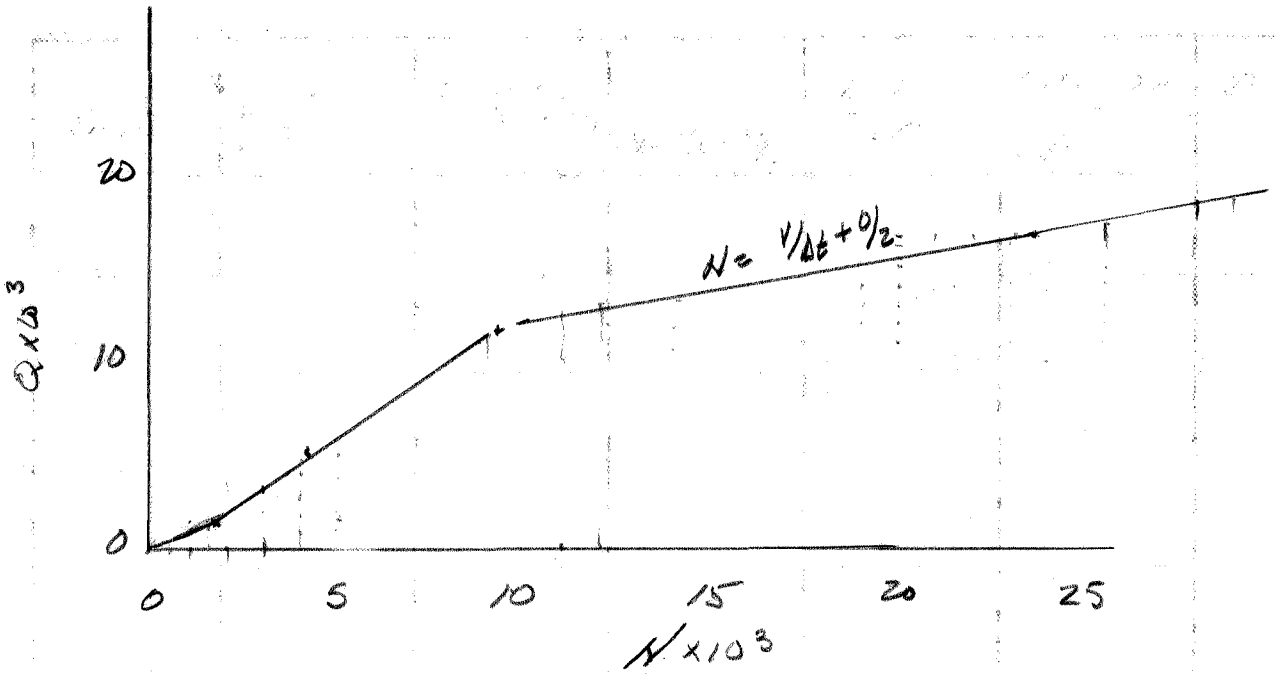

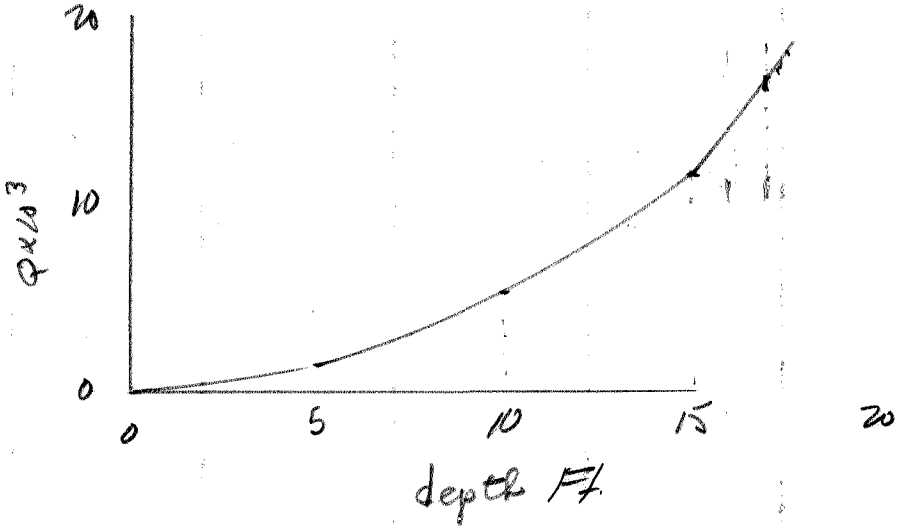

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Subject Coyote-Anderson Dam Failure Job No. _____

W. Virginia to Julian - Guadalupe E.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + O/2$	ΔN $\bar{I} - O$	OUTFLOW cfs	DEPTH
0 to 240	0	3	0		0	
280	5	12	3	3	3	
320	18	20	12	9	12	
360	22	21	20	8	15	
400	21	19	26	6	17	17.3
440	18	16	28	2	18	17.5
480	15	14	26	-2	17	17.3
520	13	12	23	-3	16	16.8
560	12	10	19	-4	15	
600	9	8	14	-5	13	
640	7	6	9	-5	11	
	6		4	-5	5	

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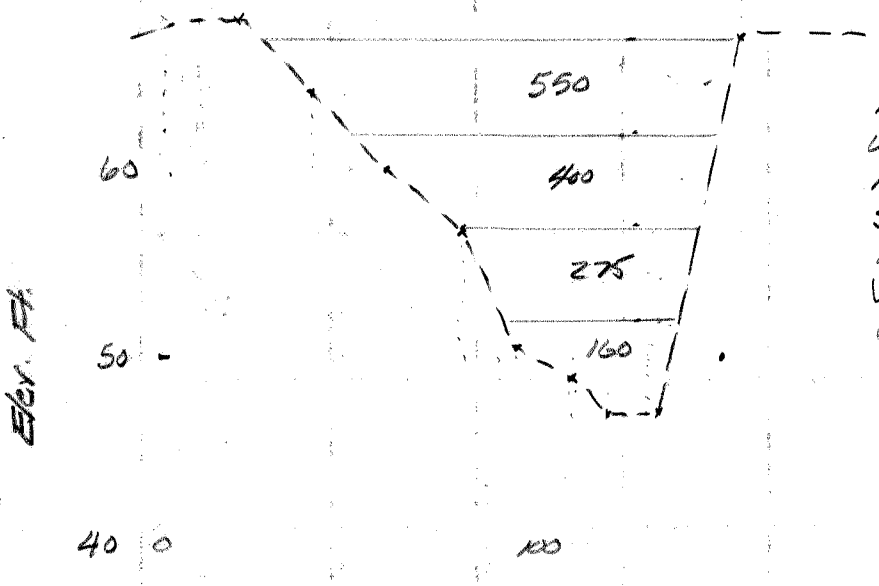
Julian to Hedding - Guadalupe R.

Section Nr. Hedding St.



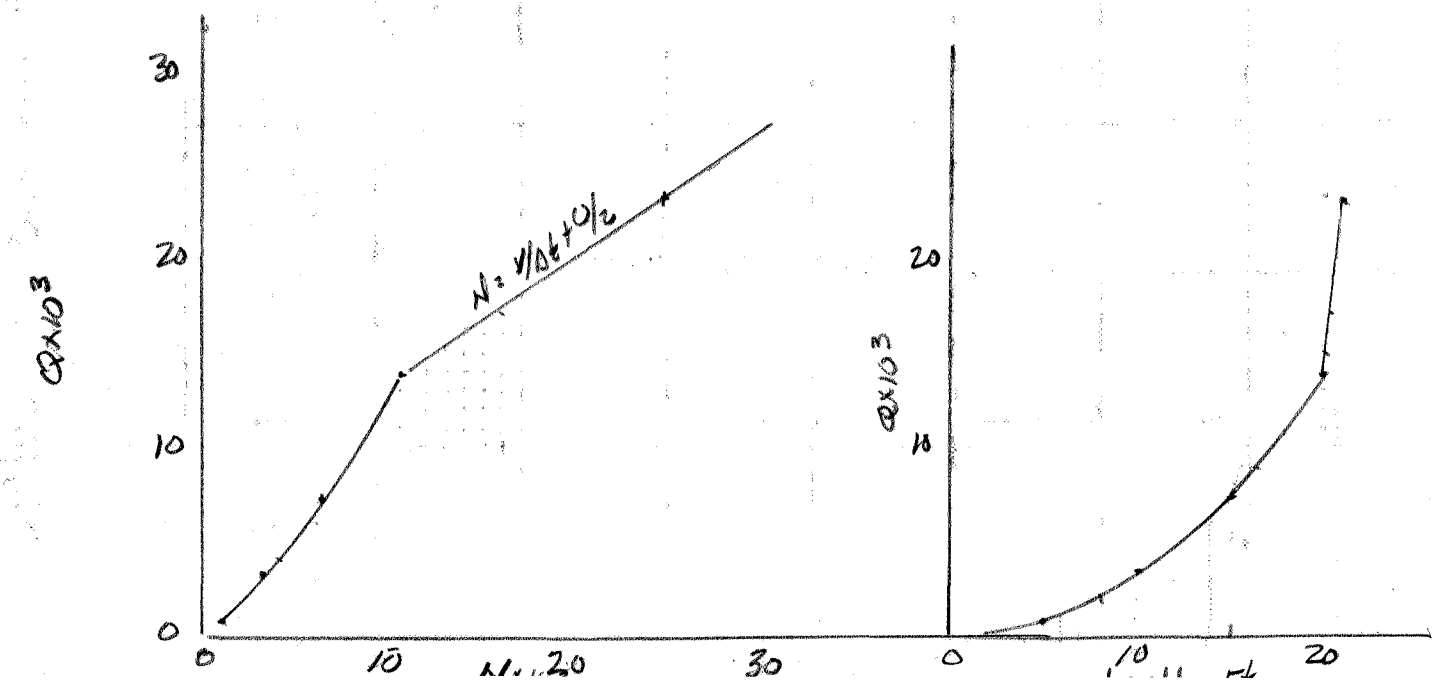
Capacity

A = 1385
WP = 170
R = 8.10 $R^{2/3}$ = 4.03
S = .003 $S^{1/2}$ = .055
n = .083
V = 45/15 x 4.03 x .055 = 10.0
Q = 13,900 cfs.

Res. Area 2.5 x 4.0 = 10 x 10^6 SF

Boundary Weir - Hedding St. L = 3000 $Q = 3.1LH^{3/2}$

H	$H^{3/2}$	Q
1	1.0	9300
2	2.83	26,300



Outflow at Downstream Channel Section — Mannings Formula

Juhan to Hedding – Guadalupe R

ELEV.	DEPTH	AREA FT^2	WP = T + 2D	$R = \frac{A}{WP}$	$R^{2/3}$	"n"	S	$S^{1/2}$	$V = \frac{1.49}{n} R^{2/3} S^{1/2}$	Q cfs
	0									
	5	160	55	2.9	2.03	.033	.003	.055	5.1	800
	10	435	85	5.1	2.97	"	"	"	7.4	3200
	15	835	130	6.4	3.46	"	"	"	8.6	7200
	20	1385	170	8.1	4.05	"	"	"	10.1	13900

Storage Volume — N Values

L = 6000

Tulon to Hedding - Guadalupe R.

DEPTH / ELEV	X-SECTION AREA Ft² Section Upstream	X-SECTION AREA Ft² Section Downstream	Avg Area Ft²	Volume = Area x L	Volume CF-Min	V/Δt t=5min	V/Δt t=10min	V/Δt t=~~20~~ 40 min	REACH Outflow CFS	N = V/Δt + O/2 t=5	N = V/Δt + O/2 t=10	N = V/Δt + O/2 t=
0									-			
5	312	160	236	1416	23.6			0.6	.8			1.0
10	762	435	599	3594	59.9			1.5	3.2			3.1
15	1387	835	1111	6666	111.1			2.8	7.2			6.4
20	1707	1385	1546	9276	154.6			3.9	13.9			10.9
21	1707	1385	1546 10,000	19276	321.3			8.0	23.2			24.6

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Subject Coyote - Anderson Dam Failure Job No. _____

Julian to Hedding - Guadalupe R.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + O/2$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH
0 to 240	0	2	0		0	
280	3	8	2	2	2	8
320	12	14	8	6	9	16.5
360	15	16	13	5	15	20.1
400	17	18	14	1	16	20.2
440	18	17	16	2	17	20.3
480	17	16	16	0	17	20.3
520	16	15	15	-1	16	20.2
560	15	14	14	-1	16	20.2
600	13	12	12	-2	15	20.1
640	11	8	9	-3	11	18
680	5	4	6	-3	6	14
			4	-2	4	11

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Subject Coyote - Anderson Dam Failure. Job No. _____

Allocation of Outflow Hyd. at Hedding.

Time	outflow Hyd.	Channel Hyd	Spill Hyd.
240	0	0	0
280	2	2	0
320	9	9	0
360	15	14	1
400	16	14	2
440	17	14	3
480	17	14	3
520	16	14	2
560	16	14	2
600	15	14	1
640	11	11	0
680	6	6	0
720	4	4	0

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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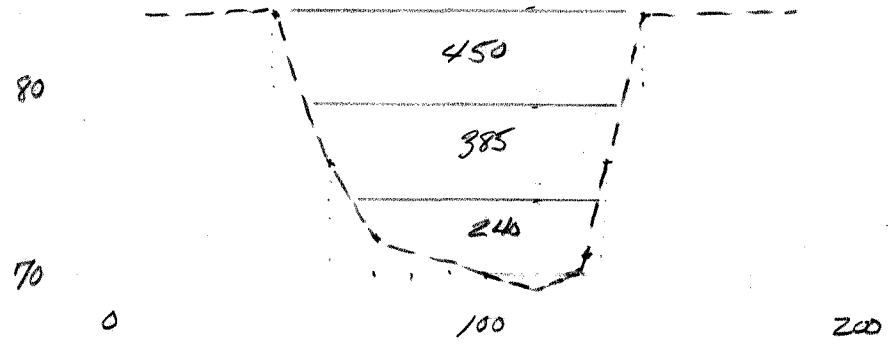
Guadalupe R. - Channel Capacities

Section Nr. Santa Clara St.



Channel Capacity

A = 1075 WP = 130

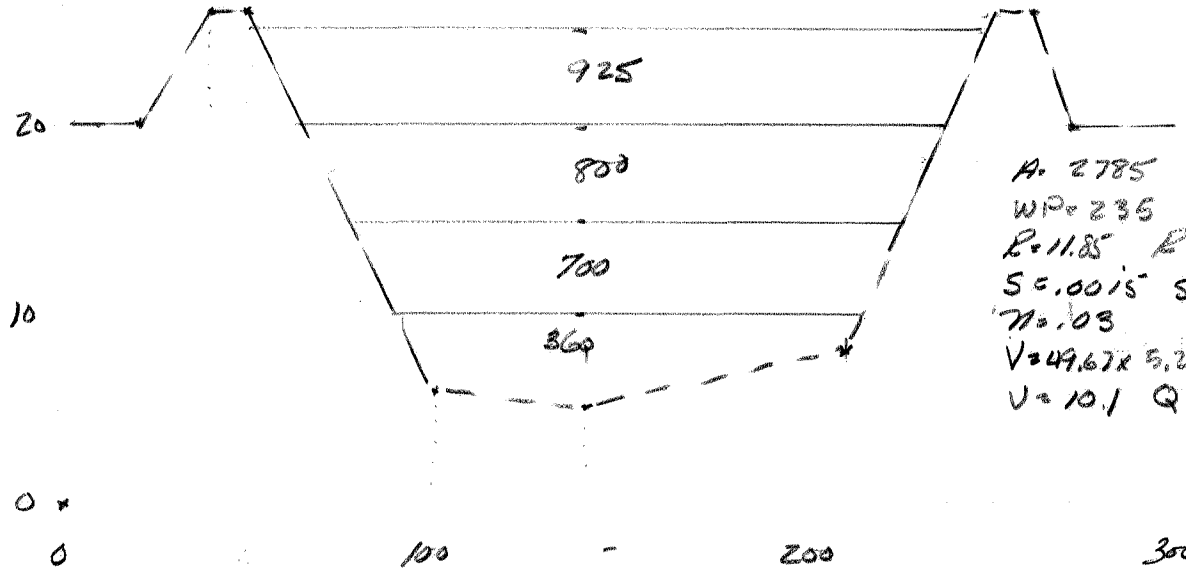
R = 8.26 $R^{4/3}$ = 4.09

n = .033 S = .002

V = 45.15 x 4.09 x .045 = 83

Q = 8900 cfs.

Section Nr. Del La Cruz Blvd.



A = 2785

WP = 235

R = 11.85 $R^{2/3}$ = 5.20

S = .001 $S^{1/2}$ = .039

n = .03

V = 49.67 x 5.2 x .039

V = 10.1 Q = 28,000 cfs

Note: Channel Capacity at Hedding Q = 14,000 cfs.

" " " Del La Cruz Blvd. Q = 28,000 cfs.

Peak flows downstream of Hedding are contained in the improved Guadalupe River.

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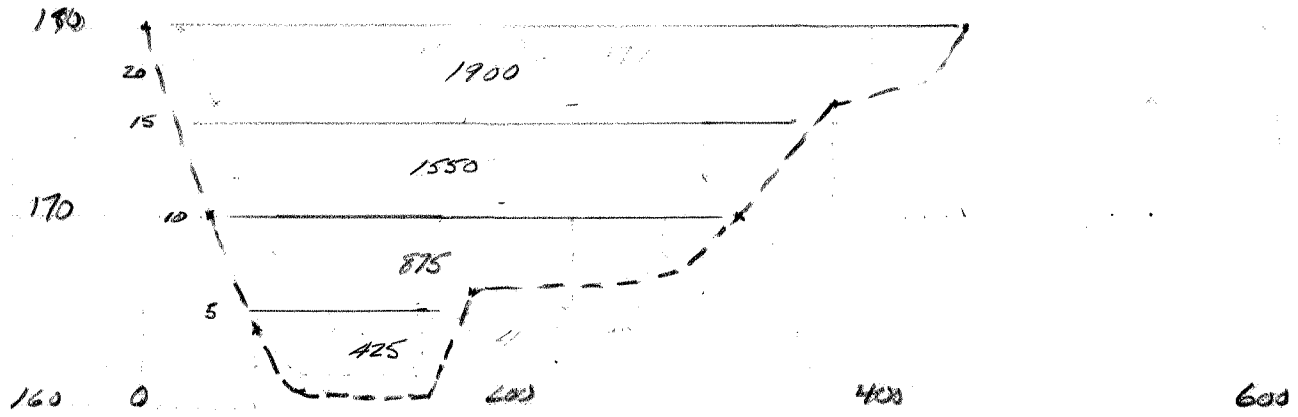
Coyote Cr. - Section Nr. Rt 101 to Tully Rd.

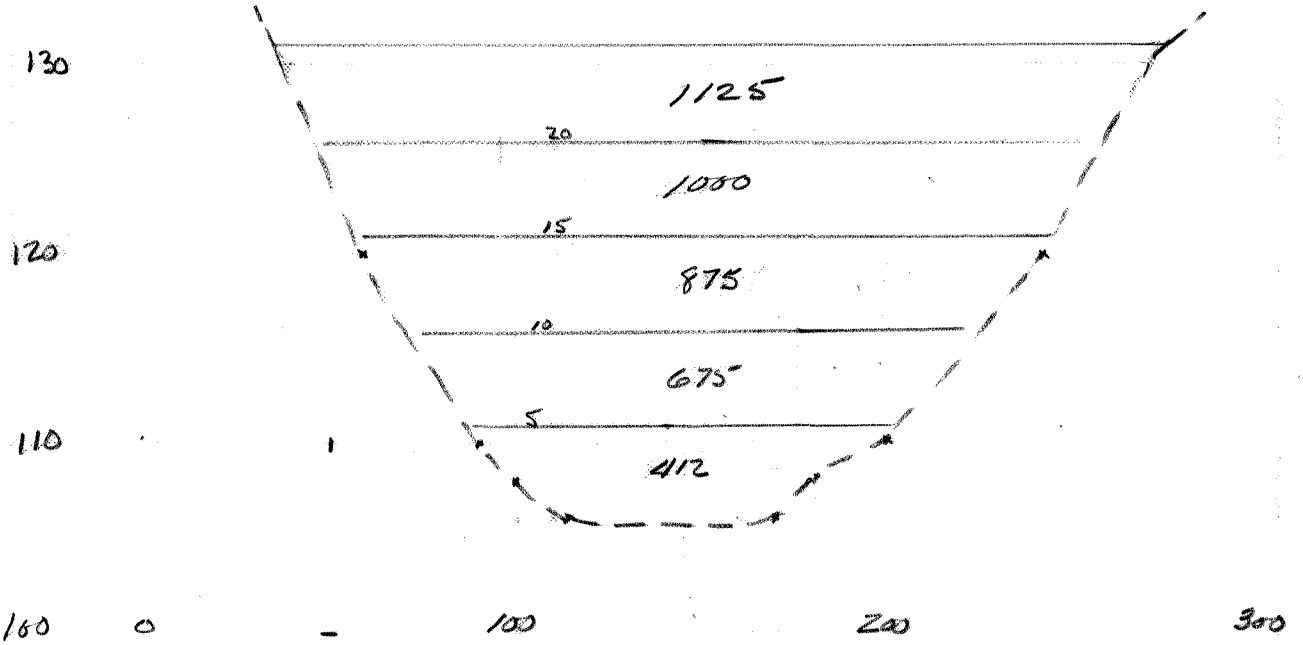
L = 21,000 ft.

Av. Slope 162 - 102 / 21,000 = .003

Section Nr. Rt 101 (Bayshore Freeway)



Section Nr. Tully Rd.



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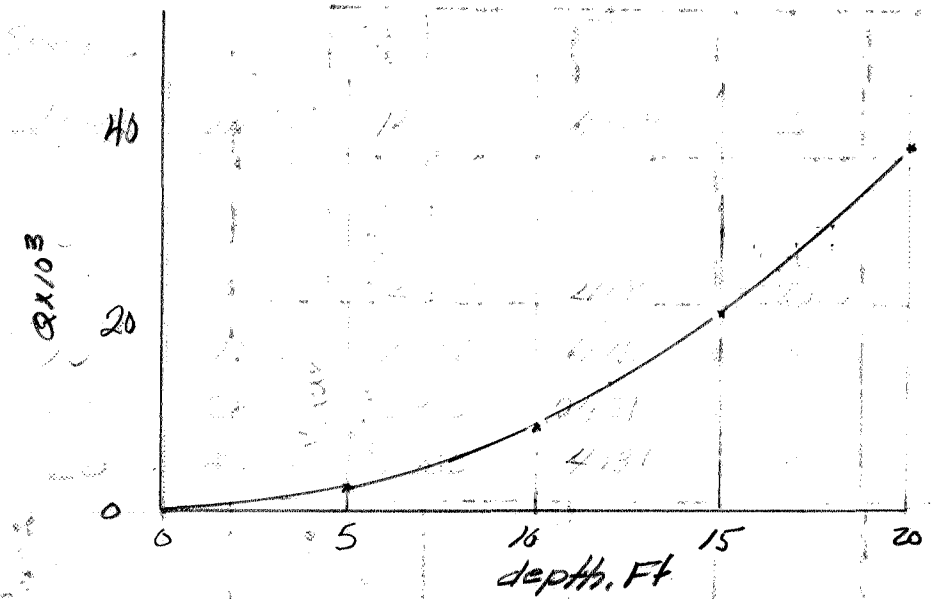
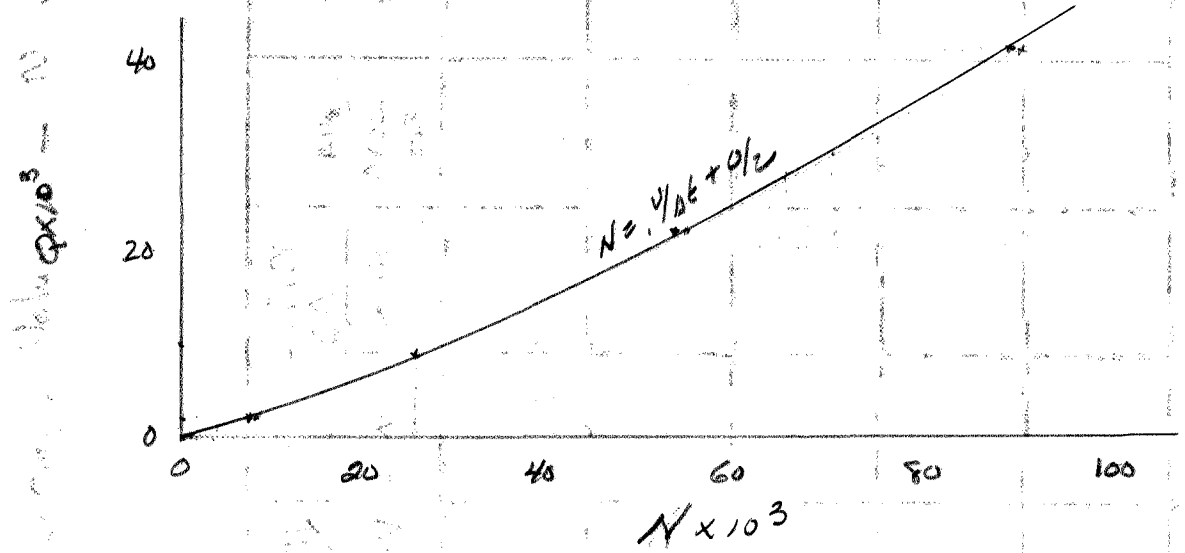
Section @ Tully Rd

$S = .003$ $S^{1/2} = .055$ $V = 1.49/n \times R^{2/3} S^{1/2}$ $n = .033$

depth	Area	WP	R	$R^{2/3}$	$S^{1/2}$	V	Q
0	1						
5	412	125	3.29	2.21	.055	5.5	2300
10	1087	175	6.21	3.37	"	8.4	9100
15	1962	220	8.92	4.30	"	10.8	20,800
20	2962	250	11.85	5.19	"	12.9	38,200





Storage Volume — N Values

Coyote Cr. Section nr. Rt 101 to Section nr. Tully Rd. L = 21,000'

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area x L x10³	Volume CF-Min x10³	V/Δt			REACH Outflow CFS	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t = 5min	t = 10min	t = 20min		t = 5	t = 10	t = 2
0												
5	425	412	419	8799	147			7.3	2			8
10	1300	1087	1194	25070	418			21	9			25
15	2850	1962	2406	50530	842			42	22			53
20	4750	2962	3856	80,980	1350			67	41			89

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Coyote Cr. Section N. Rt 101 to Section N. Tully Rd.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + O/2$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH
0	0					
20	0	1	0		0	
40	1	6	1	1	0	
60	10	11	7	6	2	
80	11	14	16	9	5	
100	16	22	25	9	9	10
120	28	32	38	13	14	12
140	33	32	56	18	23	15
160	31	31	65	9	27	16
180	30	30	70	5	30	17
200	29	29	70	0	30	17
220	28	28	69	-1	30	17
240	27	27	67	-2	28	16
260	26	26	66	-1	28	16
280	25	25	64	-2	27	16
300	25	25	62	-2	26	

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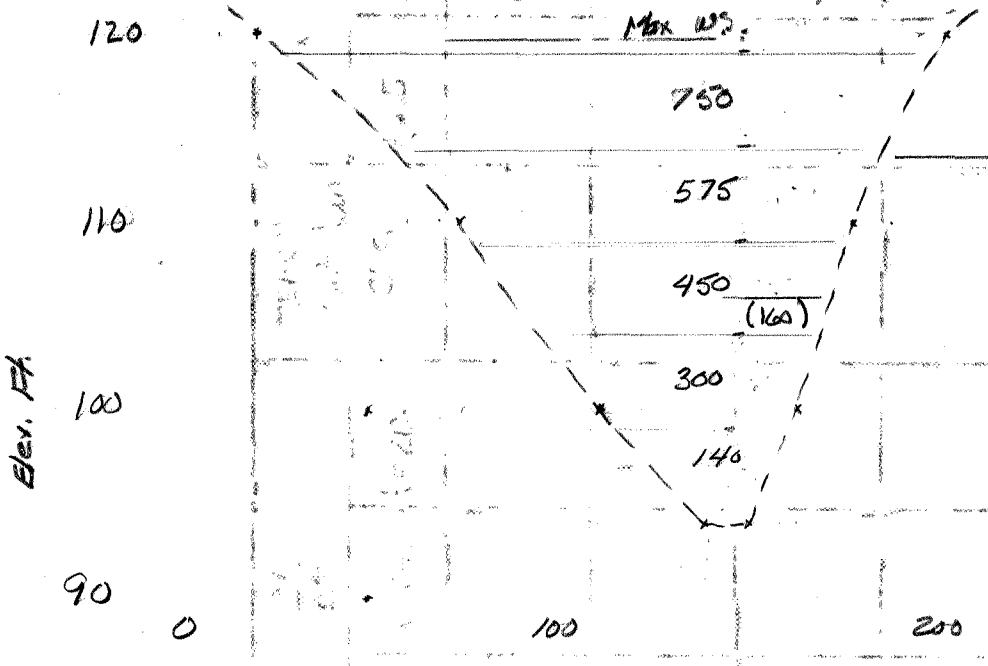
Section 5400 Ft downstream of Section Nr Tully Rd.



Reach - Section Nr. Tully Rd to Section 5400 Ft downstream

Reach Length 5400

Slope = .003

Downstream Control Section $Q = 1.49/n \times R^{2/3} \times S^{1/2}$ $n = .0033$

depth	Area	WP	R	$R^{2/3}$	$S^{1/2}$	V	Q
0							
5	140	155	2.55	1.87	.055	4.6	640
10	440	85	5.18	2.99	"	7.4	3270
15	890	130	6.85	3.61	"	8.9	7920
20	1465	178	8.61	4.20	"	10.4	15,280
25	2215	225	9.84	4.59	"	11.4	25,260

Storage Volume — N Values

L = 5400'

Coyote Cr. Section N. Tully Rd to Section 5400' downstr.

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area x L X10³	Volume CF-Min X10³	V/Δt			REACH Outflow CFS X10³	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t = 5min	t = 10min	t = 20min X10³		t = 5	t = 10	t = 2
0												
5	412	140	276	1490	24.8			1.2	.6			1.5
10	1087	440	764	4126	68.8			3.4	3.3			5.1
15	1962	890	1426	7.700	128.3			6.4	8.0			10.4
20	2962	1465	2213	11,950	199.2			10.0	15.3			17.7
25	4087	2215	3151	17,015	283.6			14.2	25.3			26.9

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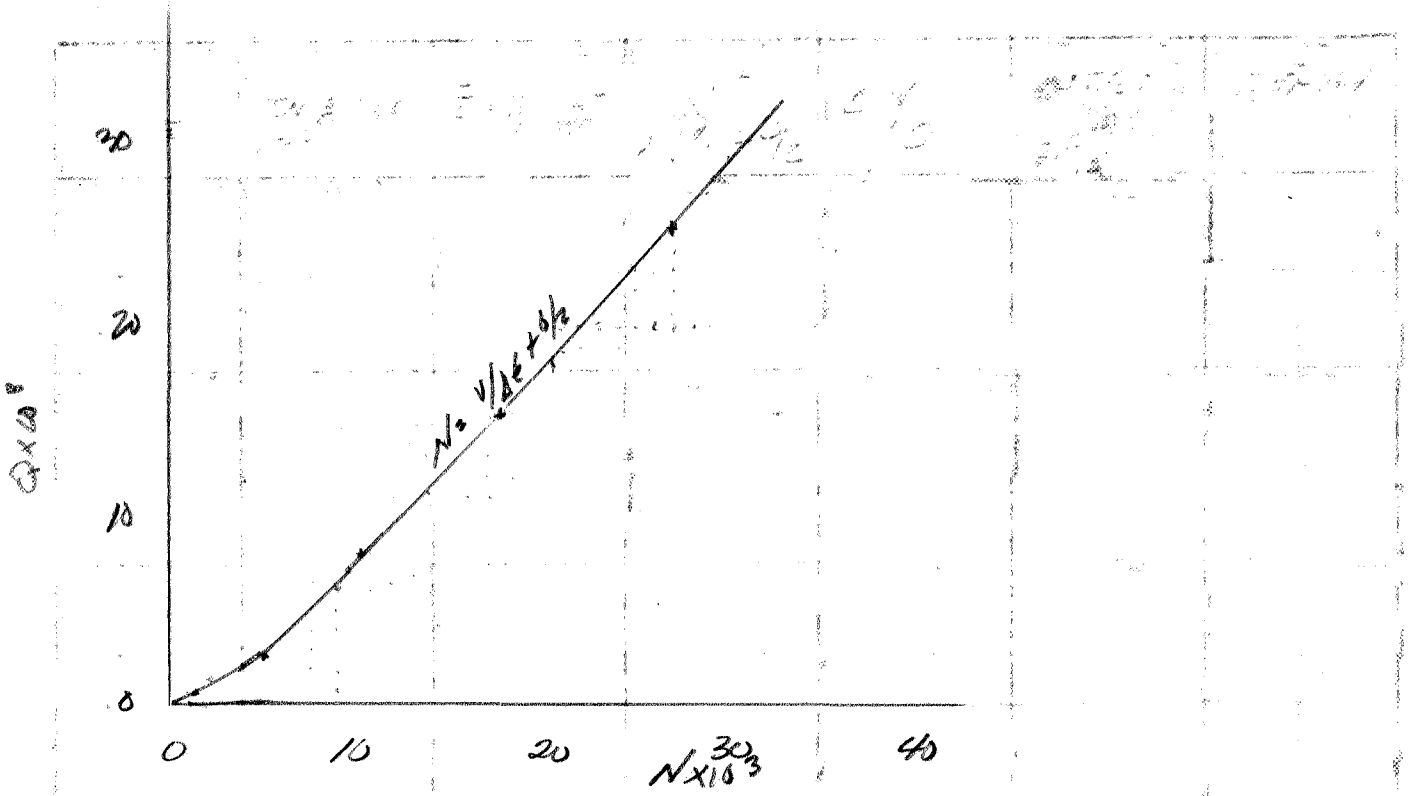

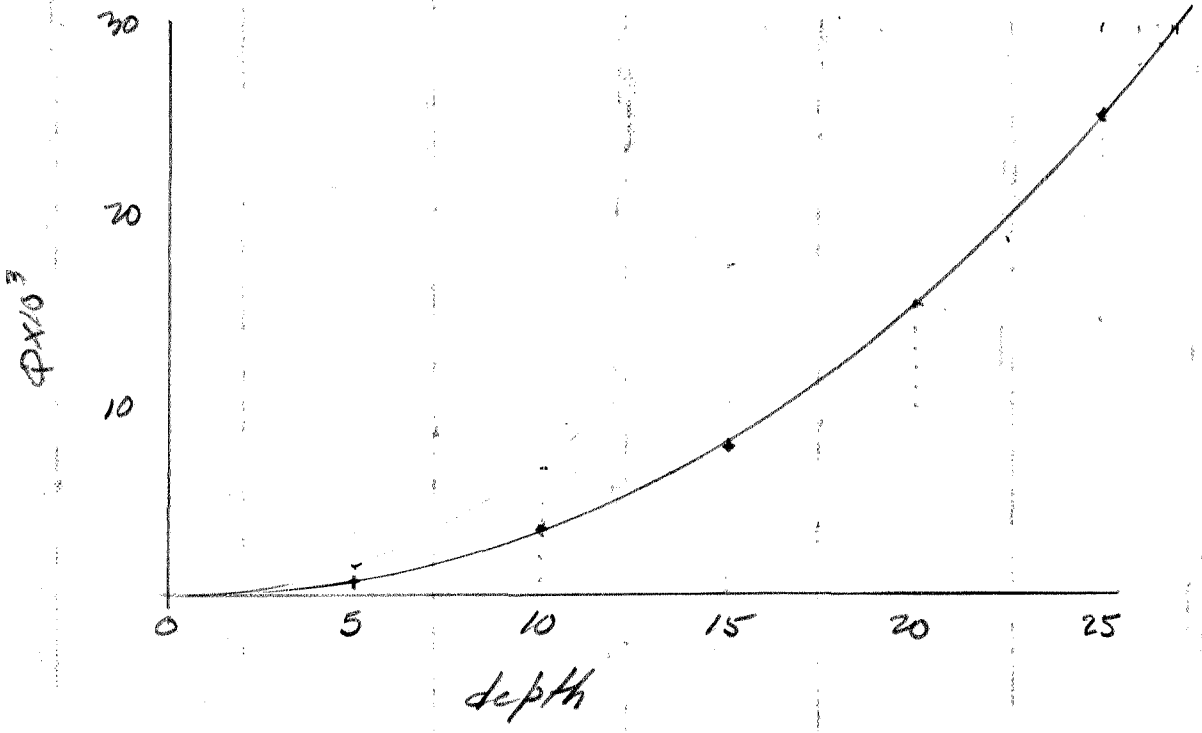

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Coyote Cr. Section Nr. Tully Rd. to Section 5400' downstr.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + \frac{O}{2}$	ΔN $\bar{I} - O$	OUTFLOW O cfs	DEPTH
0 to 40	0	1	0		0	
60	2	4	1	1	1	
80	5	7	4	3	2	
100	9	12	9	5	7	
120	14	19	14	5	12	
140	23	25	21	7	19	
160	27	29	27	6	26	
180	30	30	30	3	29	26.5
200	30	30	31	1	30	26.8
220	30	29	31	0	30	26.8
240	28	28	30	-1	29	26.5
260	28	27	29	-1	28	
280	27	26	28	-1	27	
300	26	25	27	-1	26	
320	25	24	26	-1	25	
340			25	-1	24	

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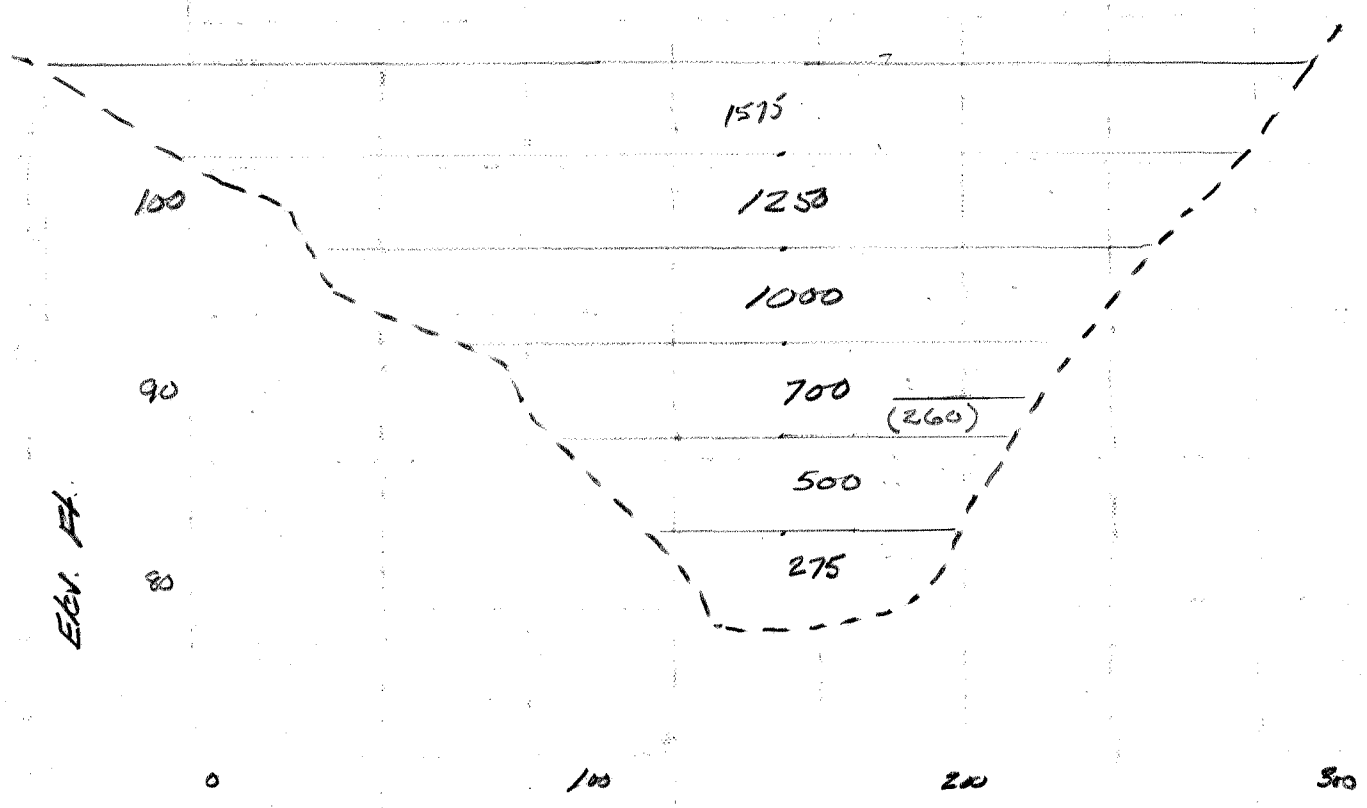
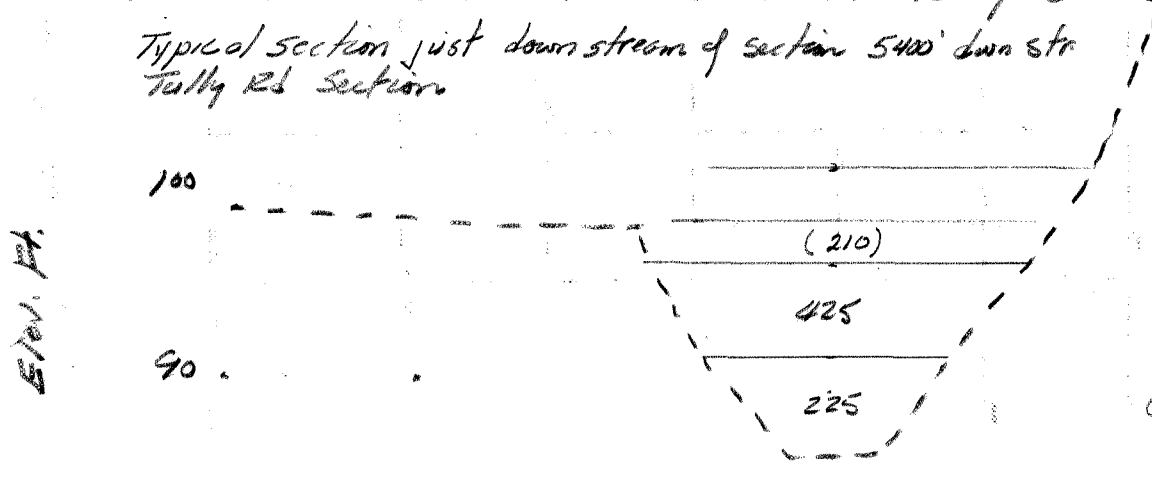
Coyote Cr. Section 5400' downstr. of Section Nr. Tully Rd. & Section Near Story Rd.

Section 10,600' downstr. Tully Rd. Section (Nr. Story Rd)



Section 8000' downstream Section Nr. Tully Rd - Channel Spill.

Typical section just downstream of section 5400' downstr Tully Rd Section.



Channel Capacity

A = 860 n = .033

WP = 132

R = 6.51 $R^{2/3}$ = 3.49

S = .0025 $S^{1/2}$ = .05

V = 45.15 x 3.49 x .05

V = 7.9

Q = 6800 cfs.

Outflow at Downstream Channel Section — Mannings Formula

Coyote Cr. Section 5400' downstr. of Tully & Section 1/2 to Section Mr Story Rd.

ELEV.	DEPTH	AREA FT^2	WP = T + 2D	$R = \frac{A}{WP}$	$R^{2/3}$	"n"	S	$S^{1/2}$	$V = \frac{1.49}{n} R^{2/3} S^{1/2}$	Q cfs
	0									
	5	275	90	3.1	2.1	.033	.025	.05	4.7	1300
	10	775	140	5.5	3.1	"	"	"	7.1	5500
	15	1475	190	7.8	3.9	"	"	"	8.9	13,000
	20	2475	270	9.1	4.4	"	"	"	9.9	24,500
	25	3750	330	11.3	5.1	"	"	"	11.4	42,800

Storage Volume — N Values

L = 5200

Coyote Cr. Section 5400' downstr of Tully Rd Section to Section nr Story Rd.

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area x L	Volume CF-Min	V/Δt			REACH Outflow CFS	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t = 5min	t = 10min	t = 20min		t = 5	t = 10	t =
0												
5	140	275	208	1082	18.0			0.9	1.3			1.6
10	440	775	608	3162	52.7			2.6	5.5			5.4
12 / 15	600 / 600	1035 / 1035	818 / 818	4254 / 13,800	300			15.0	13.0			21.5
20	600	1035	818	4254 / 36,800	684			34.2	24.5			46.5

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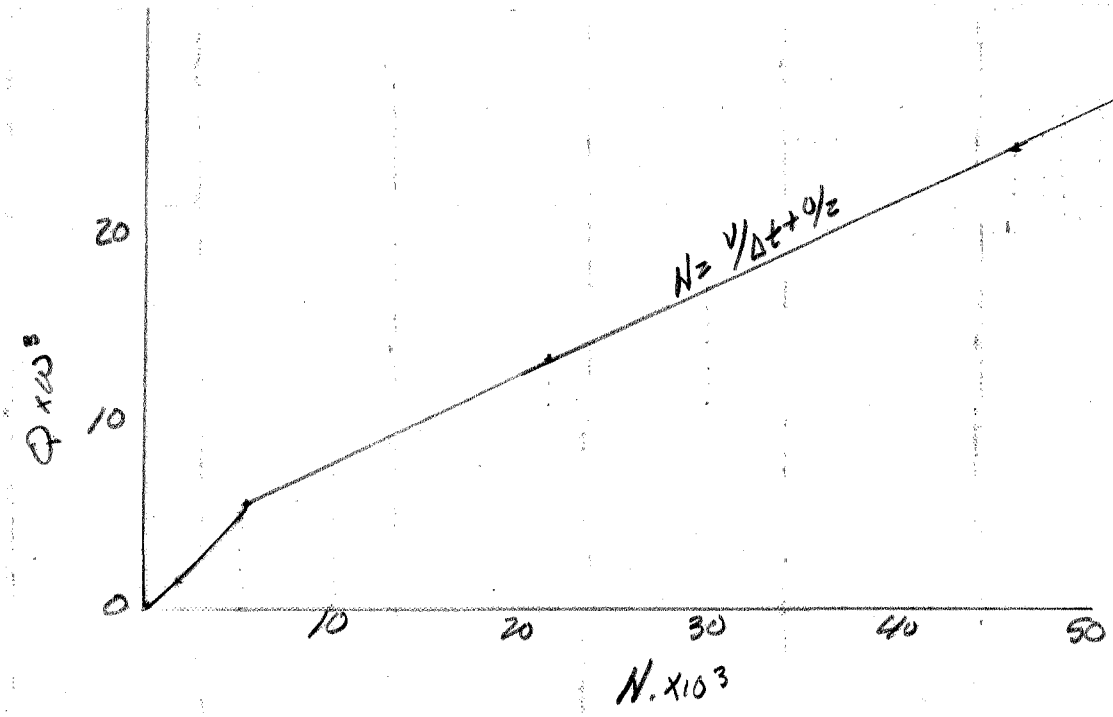
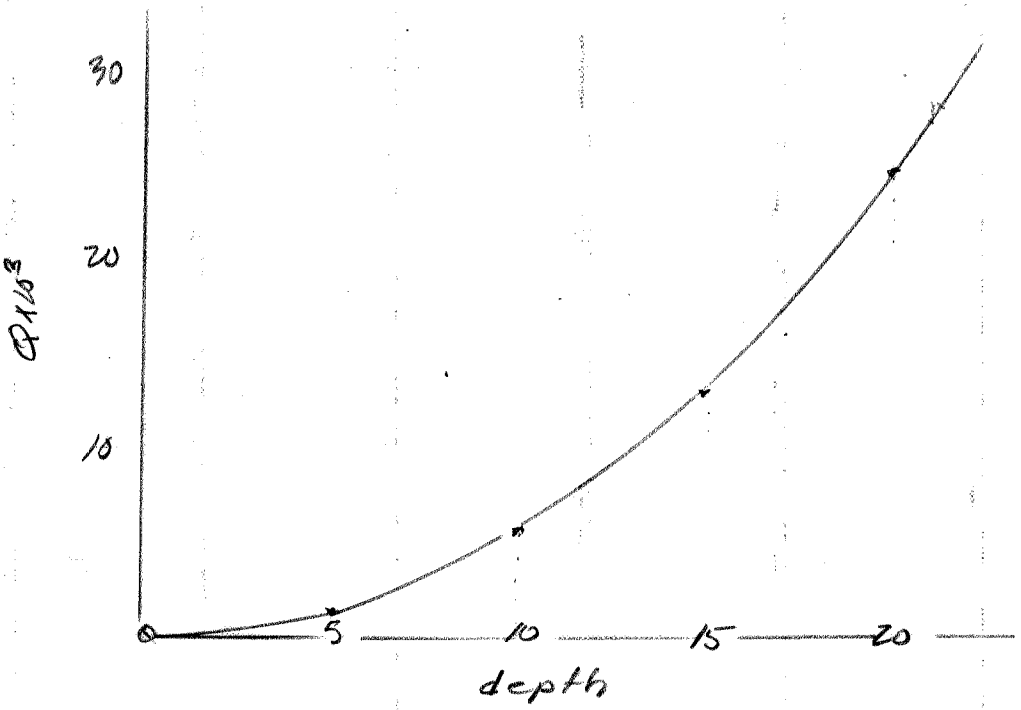
Max depth in channel = 12'

Res. Area $1.14 \times 4.0 \times 10^6 = 4.6 \times 10^6$ SF





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Coyote Cr. Section 5400' downstr. of Tilly Rd Section to Section nr. Story Rd.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + \frac{O}{2}$	ΔN $\bar{I} - O$	OUTFLOW cfs	DEPTH
0 to 40	0	1	0		0	
60	1	2	1	1	1	
80	2	5	2	1	2	
100	7	10	5	3	5	
120	12	16	10	5	7	
140	19	23	19	9	12	
160	26	28	30	11	17	
180	29	30	41	11	22	
200	30	30	49	8	26	
220	30	29	53	4	27	21
240	29	28	55	2	28	21
260	28	27	55	0	28	21
280	27	26	54	-1	28	21
300	26	25	52	-2	27	21
320	25	24	50	-2	26	
340	24	23	48	-2	25	

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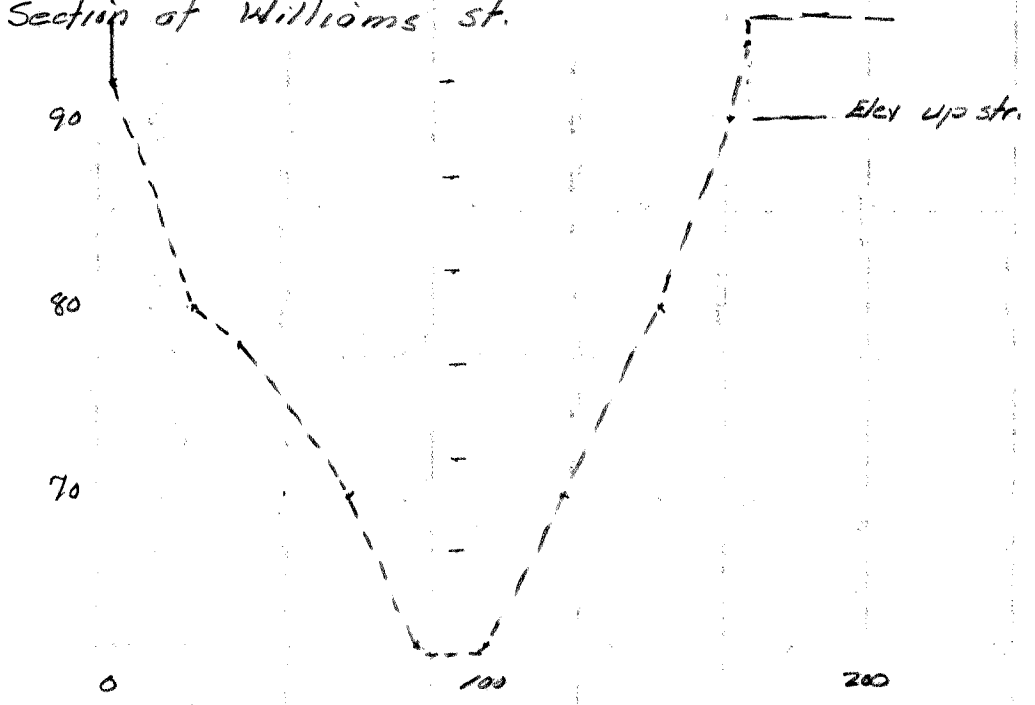
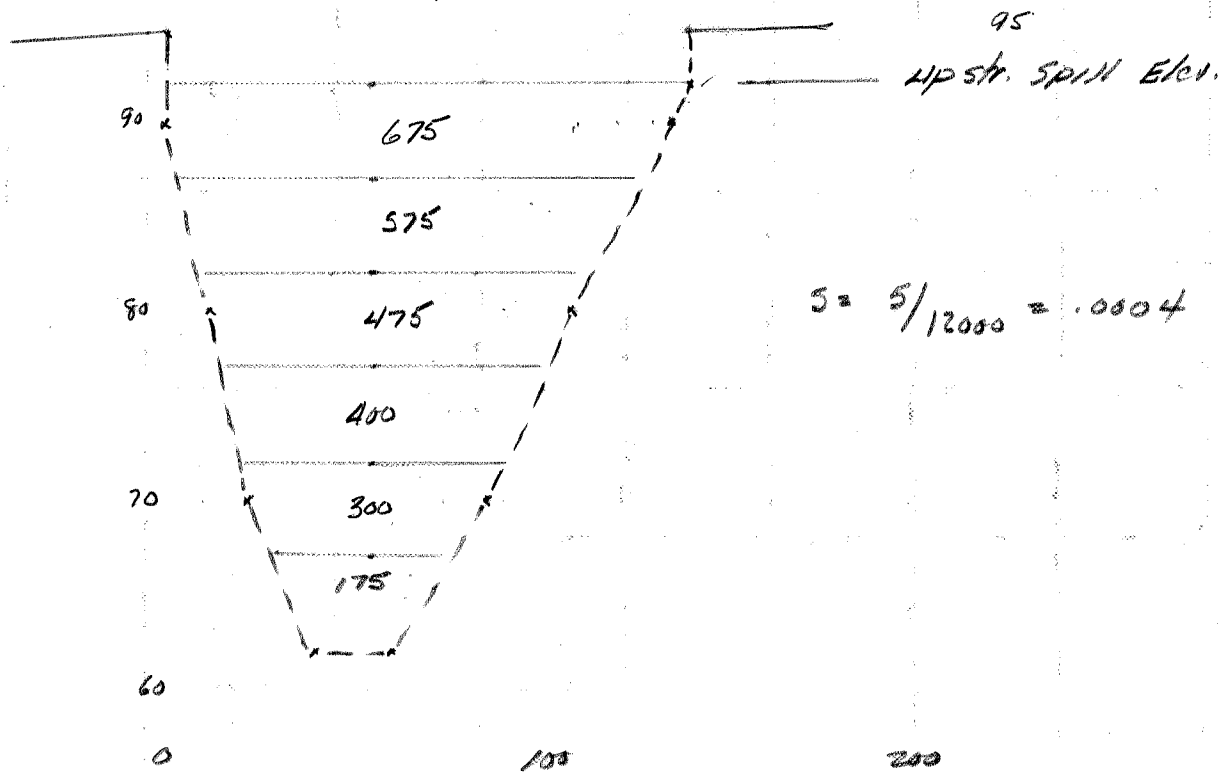
Coyote Cr. Reach Section Mr. Story Rd to E. Santa Clara St.

Section at Williams st.



Section at East Santa Clara



$S = 5/12000 = .0004$

Outflow at Downstream Channel Section — Mannings Formula

Coyote Cr. Reach Nr. Story Rd to E Santa Clara

ELEV.	DEPTH	AREA FT^2	WP $=T+2D$	$R=\frac{A}{WP}$	$R^{2/3}$	"n"	S	$S^{1/2}$	$V=\frac{1.49}{n}R^{2/3}S^{1/2}$	Q cfs
	5	175	60	2.9	2.04	.033	.0004	.02	1.8	320
	10	475	90	5.3	3.03				2.7	1300
	15	875	120	7.3	3.76				3.4	2970
	20	1350	145	9.3	4.43				4.0	5400
	25	1925	175	11.0	4.95				4.7	7830
	30	2600	200	13.0	5.53				5.0	13,000

Storage Volume — N Values

L = 10,800'

Coyote Cr. Reach N. Story Rd to E Santa Clara St.

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area x L x10³	Volume CF-Min x10³	V/Δt			REACH Outflow CFS x10³	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t = 5min	t = 10min	t = ~~20~~ 40 min x10³		t = 5	t = 10	t = 40/2 x10³
5	275	175	225	2430	40.5			1.0	0.3			1.2
10	775	475	625	6750	112.5			2.8	1.3			3.5
20	2475	1850	1912	20,655	344			8.6	5.4			11.3
30	5300	2600	3950	42,660	711			17.8	13.0			24.3
31 / 1			3950	42,700 / 21,200	1073			26.8	24.8			39.2
	Channel Res.											

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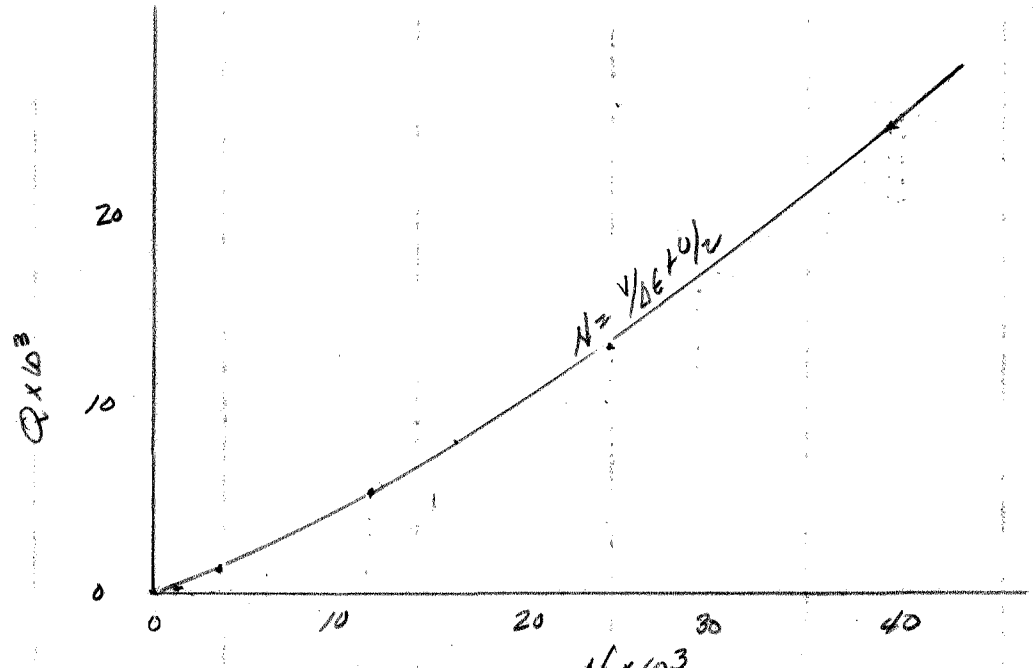
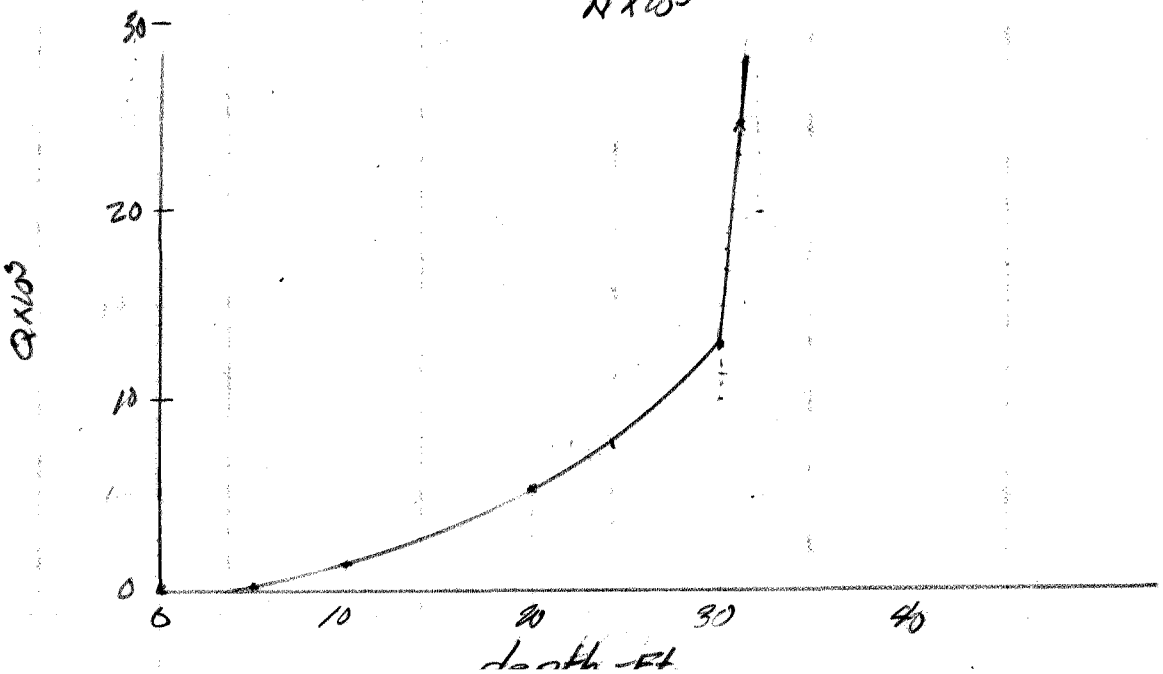
Boundary Weir - E Santa Clara.

$L = 3800'$ $Q = 3.1 L H^{3/2}$

H	$H^{3/2}$	Q
1	1.0	11,800
2	2.83	33,300

Res. Area $5.3 \times 4.0 \times 10^6 = 21.2 \times 10^6$ SF





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Coyote R. Section N. Story Rd to E. Santa Clara

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + O/2$	ΔN $\bar{I} - O$	OUTFLOW Q cfs	DEPTH
0 to 40	0	1	0		0	
80	2	5	1	1	0	
120	7	12	6	5	2	
160	17	22	16	10	8	34
200	26	27	30	14	17	30.3
240	28	28	40	10	25	31.0
280	28	27	43	3	28	31.4
320	26	25	42	-1	27	31.3
360	24	23	40	-2	25	31.0
400	22	21	38	-2	23	30.9
440	20	18	36	-2	22	30.7
480		16	32	-4	19	
520			29	-3	17	

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Allocation of outflows from Res. Section Nr. Story Rd to E Santa Clara

Time	Coyote Channel	Spill over E S. Clara	
		East	West
0 to 40	0		
80	0		
120	2		
160	8	0	0
200	13	2	2
240	13	6	6
280	13	7	8
320	13	7	7
360	13	6	6
400	13	5	5
440	13	4	5
480	13	3	3
520	13	2	2

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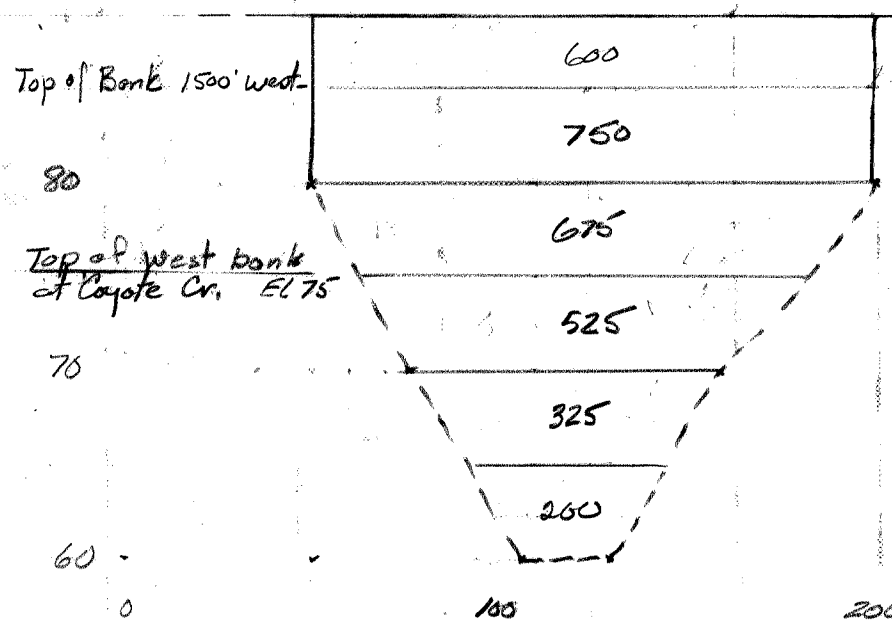
Coyote Cr. East Santa Clara to Rt 101 (downstr. crossing)



Section at Rt 101

$V = 1.49/n \times 12^{2/3} S^{1/2}$

Channel Cap of El 75

$A = 1050$ $S = .0004$

$WP = 150$ $R = 7.0$ $R^{2/3} = 3.66$

$n = .033$

$V = 3.3$ $Q = 3500$ cfs.

Elev Rt 101 of Coyote Cr. 89 Ft.

500' westerly 80 Ft

1600' " 85 Ft.

4000 " 75 Ft.

Inflow Coyote Channel 13,000 cfs

E. Santa Clara (Easterly) 7,000 cfs

Total 20,000 cfs.

Rec. Area. $2.5 \times 4.0 \times 10^6 = 10 \times 10^6$ SF

Boundary Weir $L = 1200'$

H	$H^{3/2}$	Q
1	1	3700
2	2.83	10,500

Outflow at Downstream Channel Section — Mannings Formula

Coyote Cr. E. Santa Clara to Rt 101

ELEV.	DEPTH	AREA FT^2	WP = T + 2D	$R = \frac{A}{WP}$	$R^{2/3}$	"n"	S	$S^{1/2}$	$V = \frac{1.49}{n} R^{2/3} S^{1/2}$	Q cfs
	5	200	60	3.3	2.2	.033	.0004	.02	2.0	400
	10	525	105	5.0	2.9				2.6	1400
	15	1050	150	7.0	3.7				3.3	3500
	20	1725	190	9.1	4.4				3.9	6800
	25	2450	200	12.2	5.3				4.8	11,800

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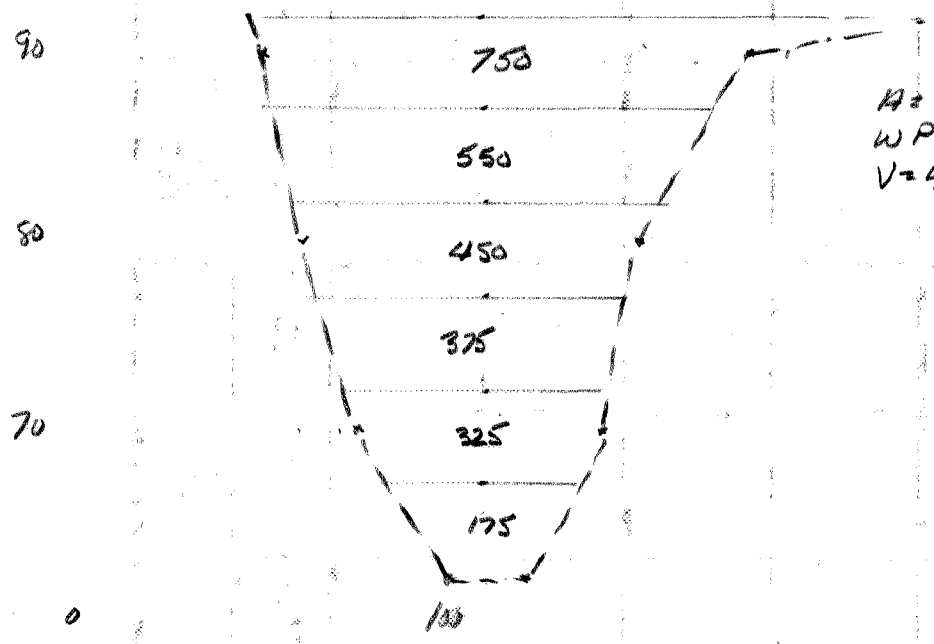
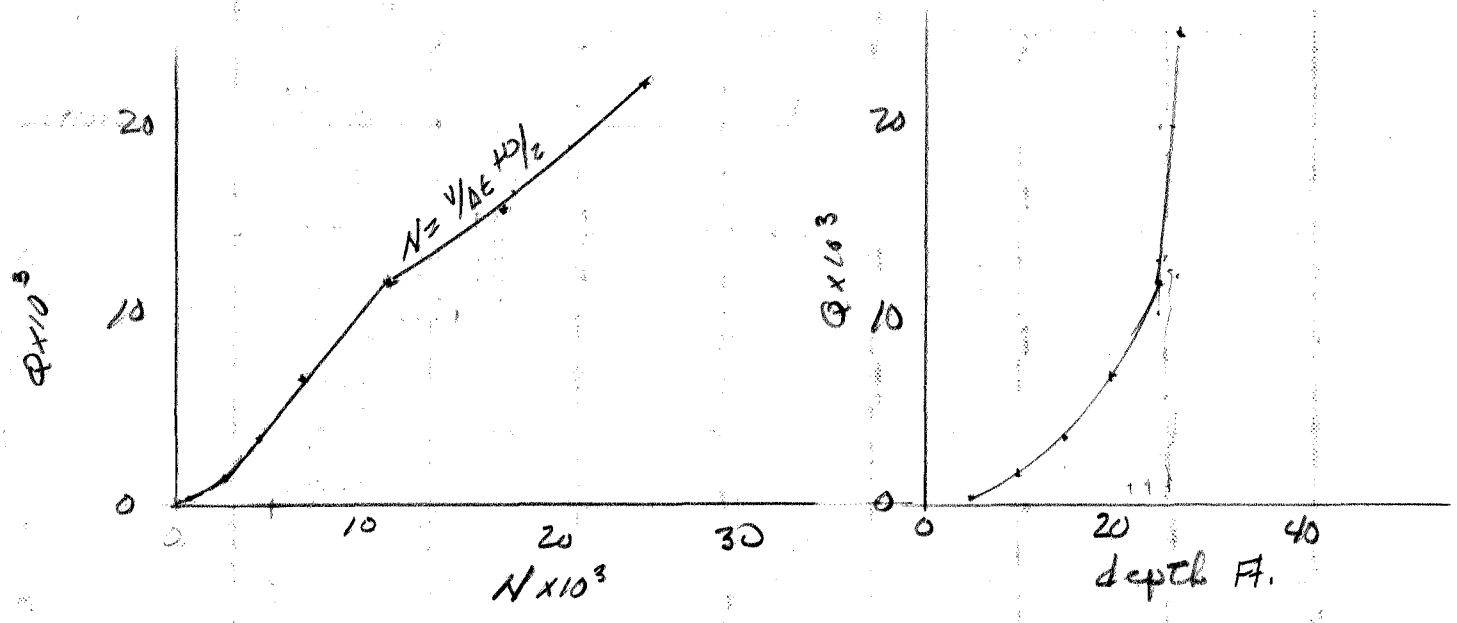
Subject Coyote - Anderson Dam Failure Job No.

Section Nr. Julian St.



A = 2750 S = .0004
WP = 200 $R^{2/3}$ = 5.74
V = 5.2 Q = 14,000 cfs.



Storage Volume — N Values

Coyote Cr. E. Santa Clara to Rt 101 $L = 6000'$

DEPTH / ELEV	X-SECTION AREA Ft^2 Section Upstream	Section Downstream	Avg Area Ft^2	Volume = Area × L	Volume CF-Min $\times 10^3$	$\frac{V}{\Delta t}$ t = 5 min	t = 10 min	t = ~~20~~ 40 min $\times 10^3$	REACH Outflow CFS	$N = \frac{V}{\Delta t} + \frac{O}{2}$ t = 5	t = 10	t = ~~20~~ 40 $\times 10^3$
5	175	200	188	1128	18.8			.5	.4			.7
10	475	525	500	3000	50.0			1.25	1.4			2.5
15	875	1050	963	5778	96.3			2.4	3.5			4.2
20	1350	1725	1338	8028	133.8			3.3	6.8			6.7
25	1925	2475	2200	13200	220			5.5	11.8			11.4
26				13200 / 10,000	387			9.7	16.5			17.5
27				1320 / 20,000	553			13.8	22.3			25.0

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Coyote Cr. E. Santa Clara to ef 101

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + O/2$	ΔN $\bar{I} - O$	OUTFLOW O cfs	DEPTH
0 to 40	0	0	0		0	
80	0	1	1	0	0	
120	2	5	1	1	0	
140	8	12	6	5	5	
200	15	17	13	7	13	
240	19	19	17	4	15	
280	20	20	21	4	19	
320	20	19	22	1	20	27.5
360	19	18	21	-1	19	
400	18	17	20	-1	18	
440	17	16	19	-1	17	
480	16	15	18	-1	16	
520	15	14	17	-1	15	
560	14	13	16	-1	15	
			14	-2	14	

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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Subject Coyote - Anderson Dam Failure. Job No. _____

Guadalupe River & Coyote Cr. Spills upstr. Rt 101

Res. Area = $6.1 \times 4.0 \times 10^6 = 24.4 \times 10^6$ S.F.

Inflow hyd.

Time	Coyote Cr. at Rt 101	Coyote Cr. at S.C.	Guad. Cr.	Total
0 to 40				
80				
120				
160	0	0		0
200	1	2		3
240	3	6		9
280	7	8		15
320	8	7	0	15
360	7	6	1	14
400	6	5	2	13
440	5	5	3	13
480	4	3	3	10
520	3	2	2	7
560	3	2	2	7
600	2	1	1	4

1) outflow hyd Coyote Cr. at Rt 101 less Coyote Channel Capacity
Q = 12,000 cfs.

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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Subject Coyote - Anderson Dam Failure Job No. _____

Boundary weirs -

N. 1st street & N 4th street

$L = 150$

$Q = 3.1 L H^{3/2}$

H	$H^{3/2}$	Q
1	1.0	460
2	2.83	1300
3	5.20	2400
.5	.35	170

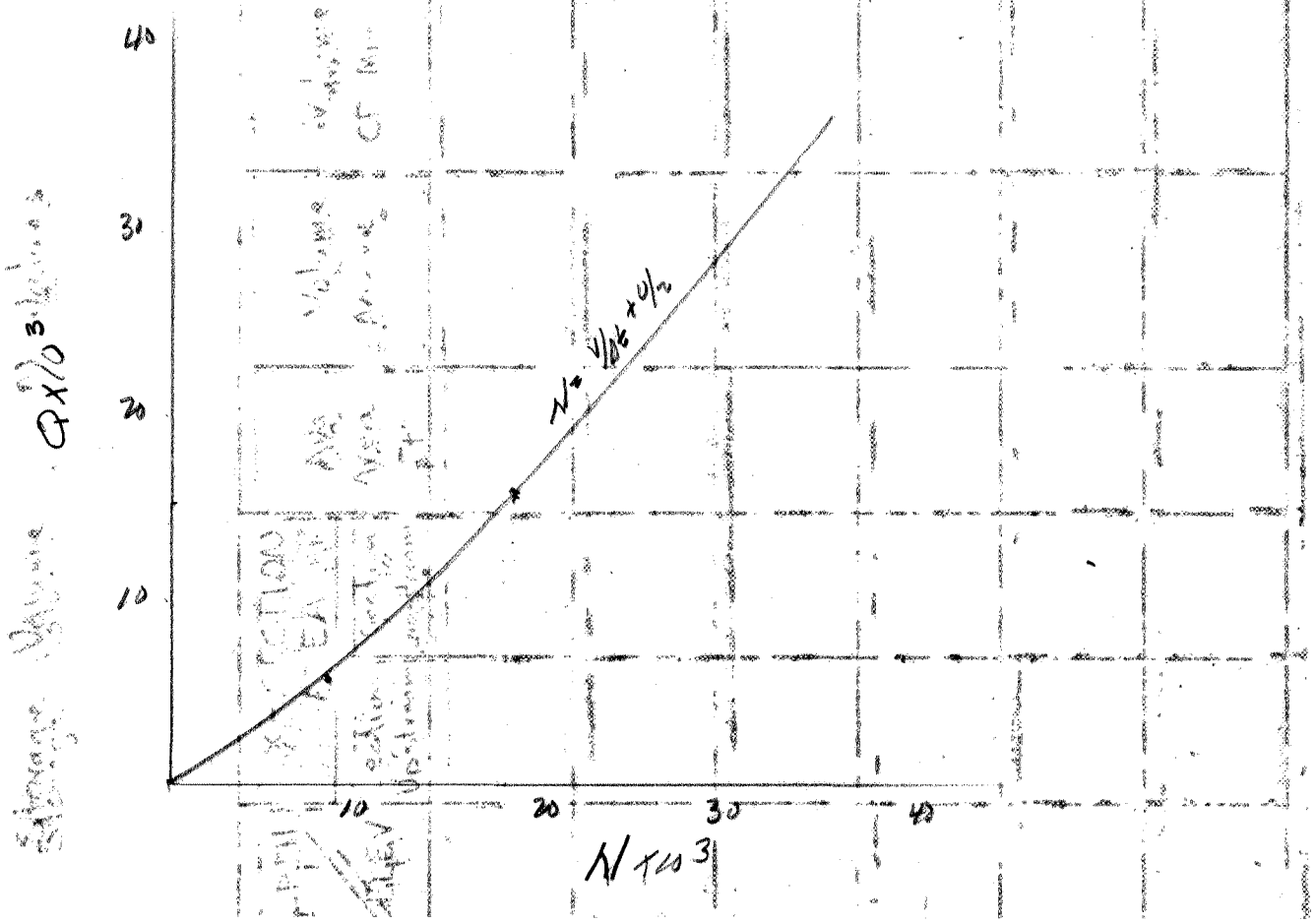
Rt 101 (Bayshore Freeway) - Intersection with Rt 17 South

$L = 5000'$

$Q = 3.1 L H^{3/2}$

H	$H^{3/2}$	Q
1	1.8	15,000
2	2,83	43,800
.5	.35	5400

Vol of Soil into Freeway $300 \times 5000 \cdot 1500 \times D^3$ CU FT.



Storage Volume — N Values

Quad E Coyote Cr. Spills upstr. Rte 61

DEPTH / ELEV	X-SECTION AREA Ft² Section Upstream	X-SECTION AREA Ft² Section Downstream	Avg Area Ft²	Volume = Area × L X10³	Volume CF-Min X10³	V/Δt t=5min	V/Δt t=10min	V/Δt t=~~20~~ 15 min	REACH Outflow CFS X10³	N = V/Δt + O/2 t=5	N = V/Δt + O/2 t=10	N = V/Δt + O/2 t = ~~2~~ 4 X10
.5				1500 / 12,200	228			5.7	5.7			8.5
1				1500 / 24,400	432			10.8	15.9			18.8
2				1500 / 48,900	838			21.0	46.4			44.2
3				1500 / 73200	1245			31.1				
	18 Lakeshore Spill											
	Res Storage											

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Subject Coyote-Anderson Dam Failure Job No. _____

Quad E Coyote Cr. Spillw. Upstr. Rt 101

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + O/2$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH
0 to 160	0	2	0		0	
200	3	6	2	2	1	
240	9	12	7	5	5	.5
280	15	15	14	7	11	.8
320	15	14	18	4	15	1.0
360	14	13	17	-1	14	1.0
400	13	13	16	-1	13	.9
440	13	11	16	0	13	.9
480	10	8	14	-2	11	.8
520	7	7	11	-3	8	
560	7	5	10	-1	7	
600	4	3	8	-2	5	
			6	-2	4	

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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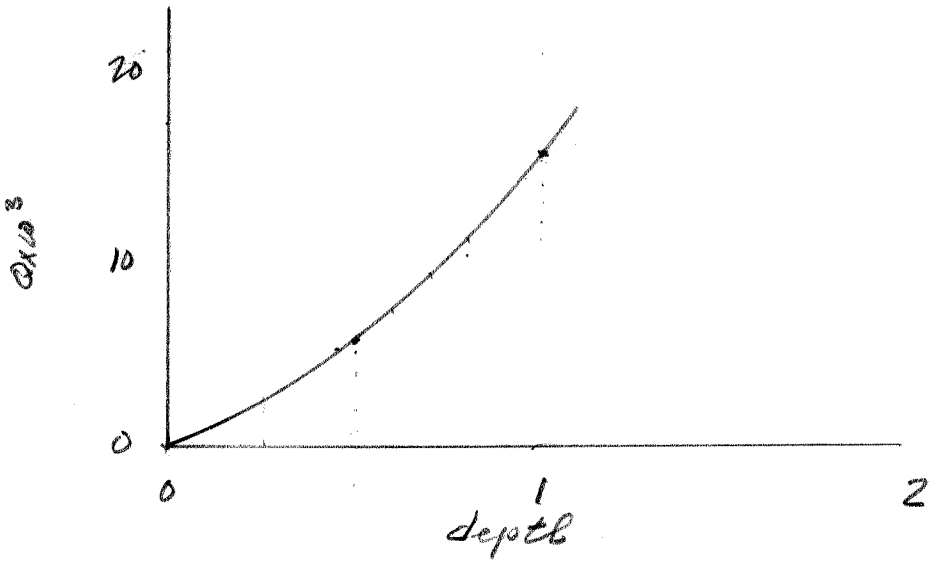
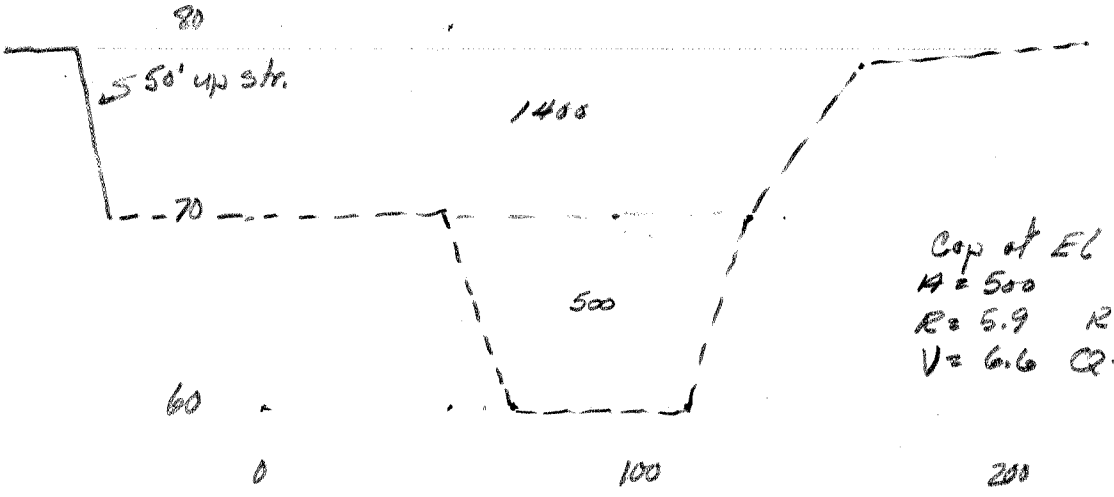


Coyote A. Rock Rt 101 (Bayshore) to Rt 17 (Nimitz)

Section downstream Mabury Rd.



Cap at El 70
A = 500 S = .002 $S^{1/2}$ = .045
R = 5.9 $R^{2/3}$ = 3.25
V = 6.6 Q = 3300 cfs.

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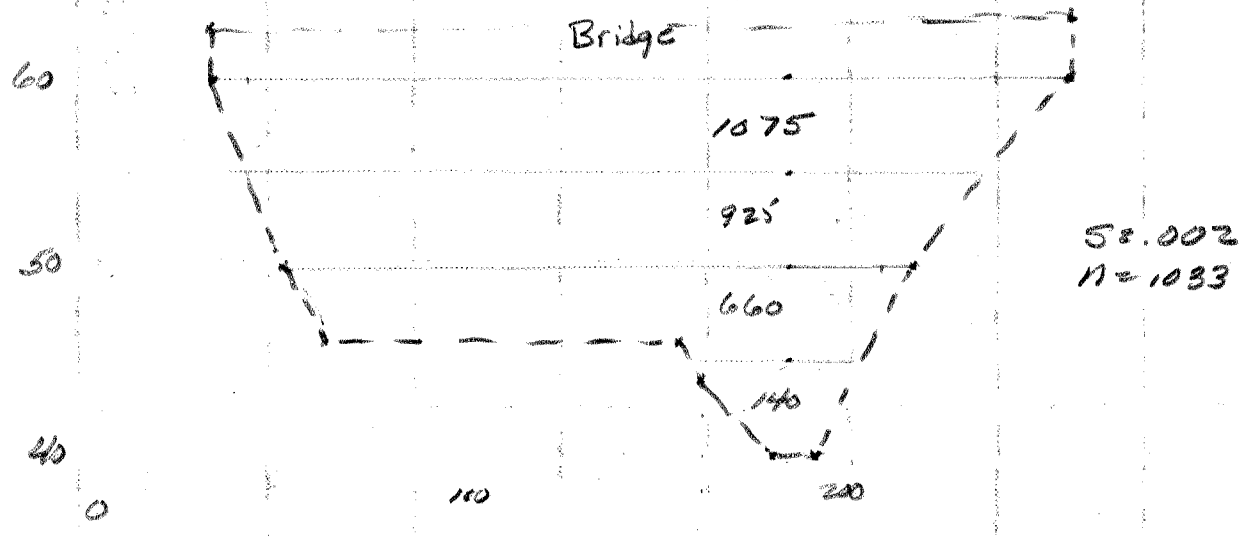
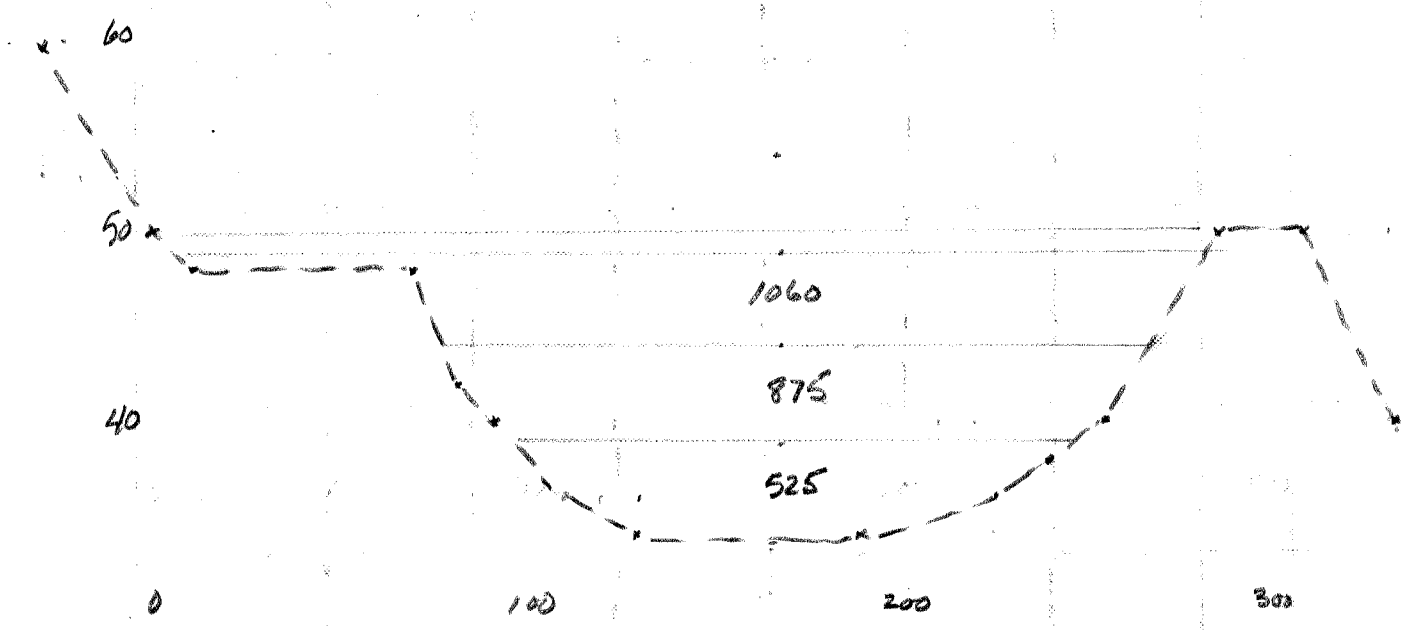
Section at Old Oakland Rd



Section at Rt 17 (Nimitz Freeway)



Outflow at Downstream Channel Section — Mannings Formula

Coyote at Nimitz (124 in)

ELEV.	DEPTH	AREA FT^2	WP = T + 2D	$R = \frac{A}{WP}$	$R^{2/3}$	"n"	S	$S^{1/2}$	$V = \frac{1.49}{n} R^{2/3} S^{1/2}$	Q cfs
34	0									0
	5	525	160	3.3	2.2	.033	.002	.045	4.5	2400
	10	1408	210	6.7	3.5				7.2	10,100
	15	2460	300	8.2	4.1				8.3	20,300
	16	2740	310	8.8	4.3				8.7	23,800

3PM 1/7

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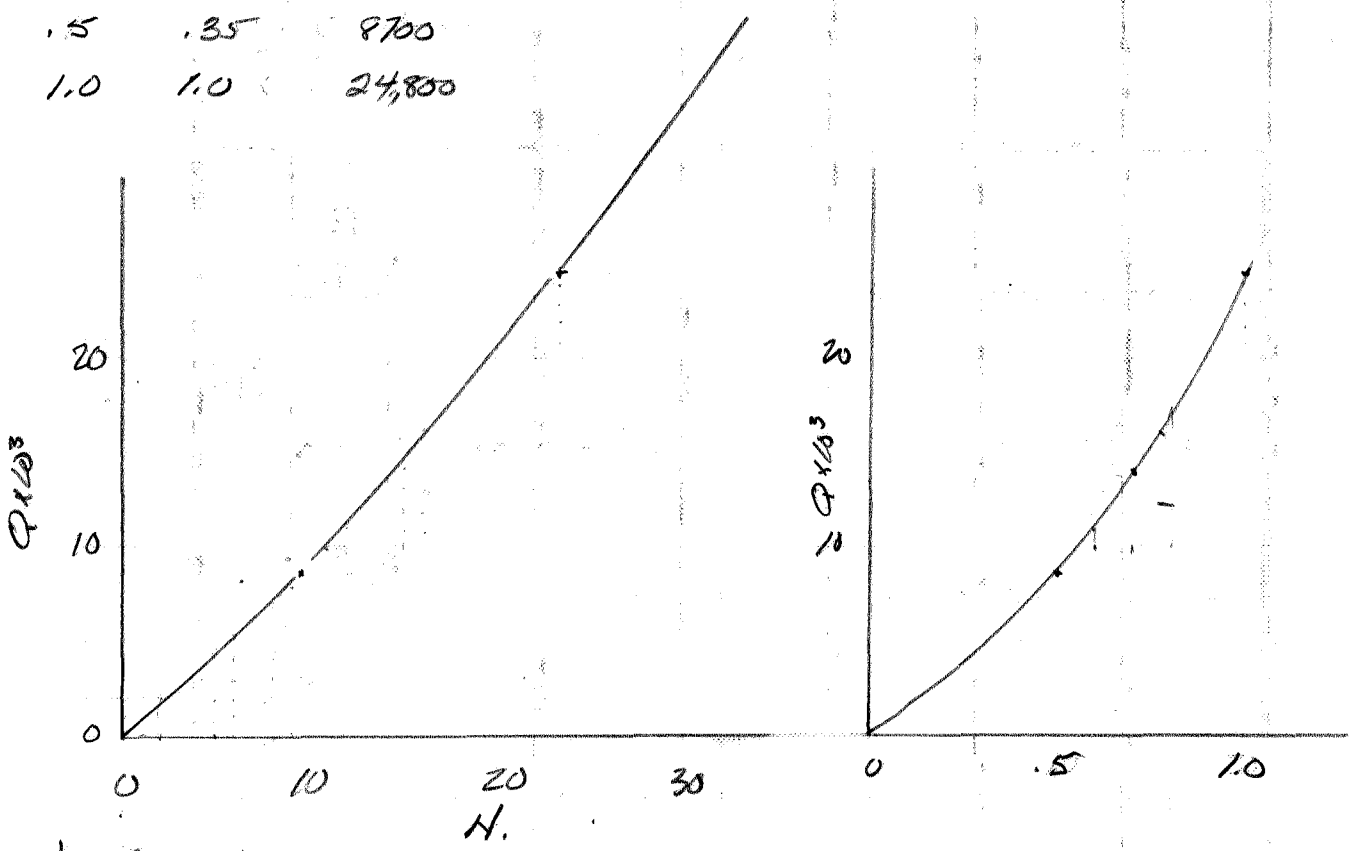
Spill into Coyote Cr. from Spill over Rt 101

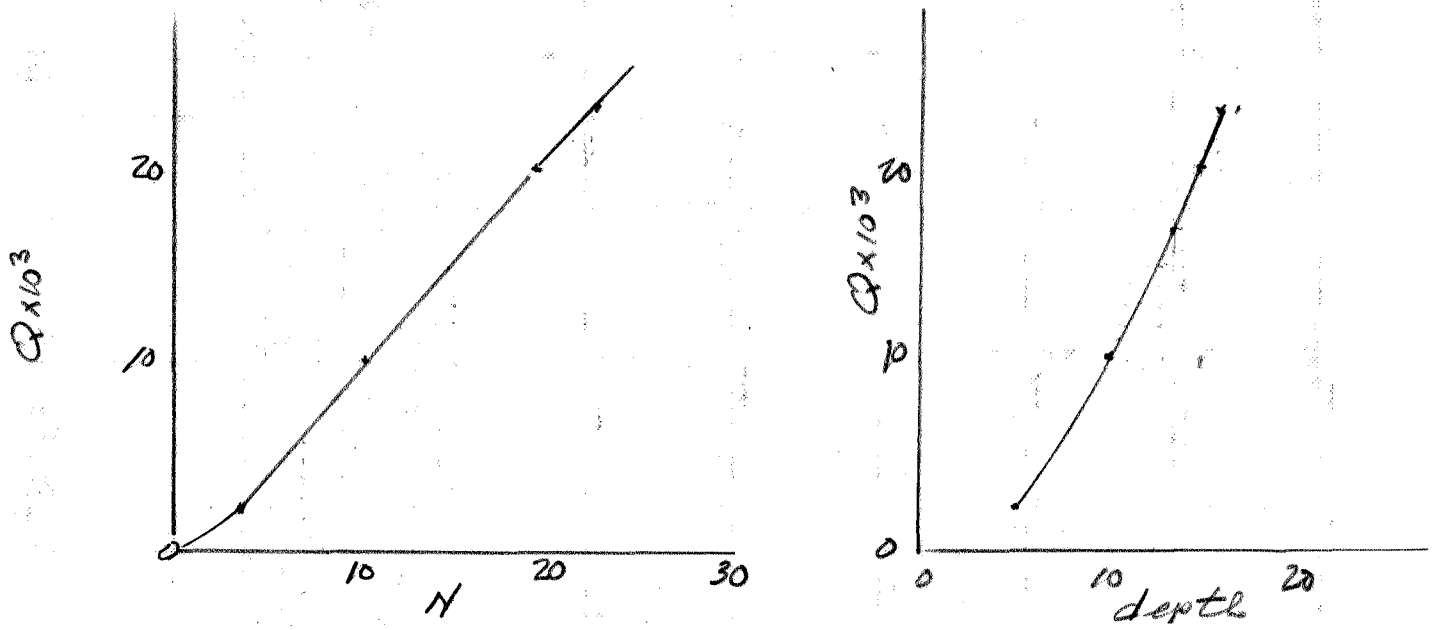
Res Area $6.5 \times 4.0 \times 10^6 = 26.0 \times 10^6$ SF

Weir at Coyote Cr. $L = 8000'$

H	$H^{3/2}$	Q
.5	.35	8700
1.0	1.0	24,800



Coyote Cr. Rt 101 to Rt 17



Storage Volume — N Values

DEPTH / ELEV	X-SECTION AREA Ft² Section Upstream	Section Downstream	Avg Area Ft²	Volume = Area x L x10³	Volume CF-Min x10³	V/Δt t=5min	t=10min	t=~~20~~ 15min x10³	REACH Outflow CFS x10³	N = V/Δt + O/2 t=5	t=10	t=
0	Spill into Coyote or from Et/01 overflow								0			0
.5				13000	217			5.4	8.7			9.7
1.0				26,000	433			10.8	24.8			23.3
Reach Bayshore (Et/01) to Nimitz (Et/7) L = 13000												
0		-							0			0
5	200	525	362	5792	96.5			2.4	2.4			3.6
10	525	1400	963	12,519	209			5.2	10.1			10.2
15	1050	2460	1755	22,815	380			9.5	20.3			19.7
16	1170	2740	1955	25415	424			10.6	23.8			22.5
17	Channel Rec			25,415 / 12000	623			15.6	23.8			27.3

By CJSC Date 6/13 Chkd. By _____ Date _____ Sheet No. 126 of _____

Subject Coyote - Anderson Dam Failure Job No. _____

Spill into Coyote Cr. from Rt 101 overflow

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + O/2$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH
0 to 160	0	2	0		0	
200	3	6	2	2	2	
240	8	11	6	4	5	
280	14	14	12	6	11	0.6
320	14	13	15	3	14	0.7
360	13	12	16	1	16	0.8
400	12	12	12	-4	11	0.6
440	12	10	11	-1	10	
480	8	8	11	0	10	
520	7	7	9	-2	8	
560	7	5	8	-1	7	
600	4	3	6	-2	5	
	2	2	4	-2	4	
			2	-2	2	

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Subject Coyote - Anderson Dam Failure Job No. _____

Coyote Cr. Rt 101 to Limit 3 (Rt 17)

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + \frac{O}{2}$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH
0 to 160	0	2	0		0	
200	3	6	2	2	1	
240	8	13	7	5	6	
280	18	20	13	6	13	12
320	22	23	20	7	21	15.2
360	23	20	22	2	23	16.0
400	17	16	19	-3	20	15.0
440	15	14	15	-4	15	13
480	14	12	14	-1	14	
520	11	10	12	-2	12	
560	9	7	10	-2	10	
600	6	4	7	-3	6	
640	3	2	5	-2	4	
680			3	-2	2	

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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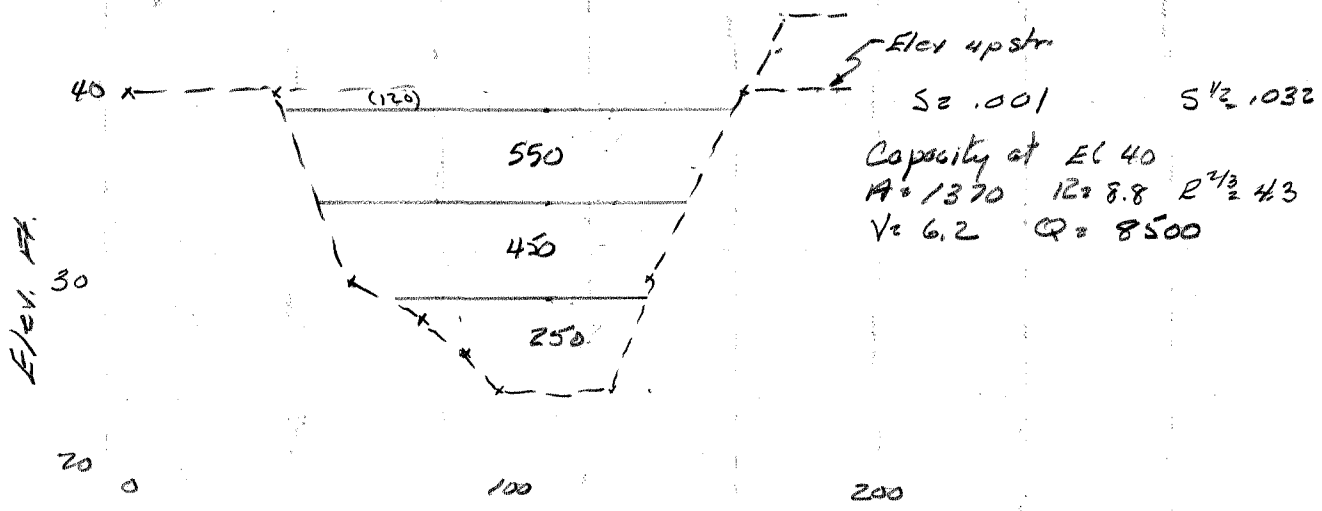
Coyote Cr. Reach Nimitz (ch 17) to Trimble Rd.

Section at Trimble Rd.



Capacity at Nimitz Q = 23,800 cfs

Peak Q = 23,000

Boundary Weir at Trimble Rd (h = 1.0') L = 6000'

$Q = 3.1 L H^{3/2}$

Depth	H	$H^{3/2}$	Q
1	–		
2	1	1.0	15,500
3	2	2.83	43,900

Res Area $3.5 \times 4 \times 10^6 = 14 \times 10^6$ SF.

Outflow at Downstream Channel Section — Mannings Formula

Coyote Cr. Nimitz (Rt 17) to Trimble Rd.

ELEV.	DEPTH	AREA FT^2	WP = T + 2D	$R = \frac{A}{WP}$	$R^{2/3}$	"n"	S	$S^{1/2}$	$V = \frac{1.49}{n} R^{2/3} S^{1/2}$	Q cfs
24	0	—								
	5	250	70	3.6	2.3	.033	.001	.032	3.4	840
	10	700	120	5.8	3.2				4.7	3300
	15	1250	150	8.3	4.1				5.9	7400
	16	1370	155	8.8	4.3				6.2	8500

Storage Volume — N Values

L = 6400

Coyote Cr. Nimitz to Trimble Rd.

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area x L x10³	Volume CF-Min x10³	V/Δt			REACH Outflow CFS	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t = 5min	t = 10min	t = ~~20~~ 40 min x10³		t = 5	t = 10	t = ~~2~~ 40 x10
0		—							0			
5	525	250	388	2483	41.4			1.0	.8			1.4
10	1400	700	1050	6720	112			2.8	3.3			4.5
15	2460	1250	1855	11872	198			4.9	7.4			8.6
16	2740	1370	2055	13152	219			5.5	8.5			9.8
17				13152 14,000	452			11.3	8.5			15.5
18				13152 28,000	686			17.1	24.0			29.1
			Channel Rec.									

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Subject Coyote-Anderson Dam Failure Job No. _____

Coyote Cr. Nimitz to Trimble Rd.

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1+I_2)$	N $N=\frac{V}{\Delta t}+\frac{O}{2}$	ΔN $\bar{I}-O$	OUTFLOW "O" cfs	DEPTH
0 to 160	0	1	0		0	
200	1	3	1	1	1	
240	6	9	3	2	3	9
280	13	17	9	6	8	16
320	21	22	18	9	12	17.2
360	23	21	28	10	23	18
400	20	17	26	-2	20	17.8
440	15	14	23	-3	17	17.6
480	14	13	20	-3	13	
520	12	11	20	0	13	
560	10	8	18	-2	11	
600	6	5	15	-3	8	
640	4	3	12	-3	8	
680	2	2	7	-5	6	
			3	-4	2	

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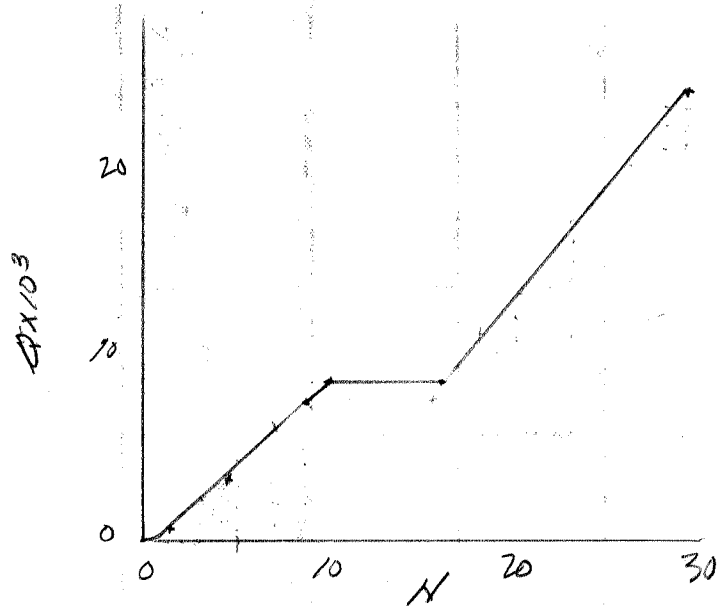
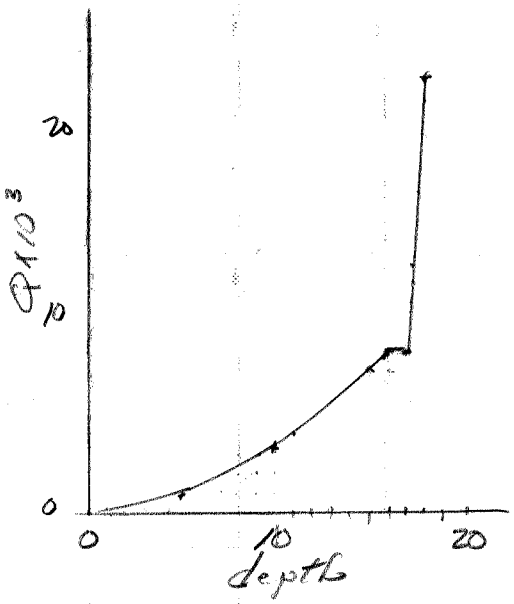
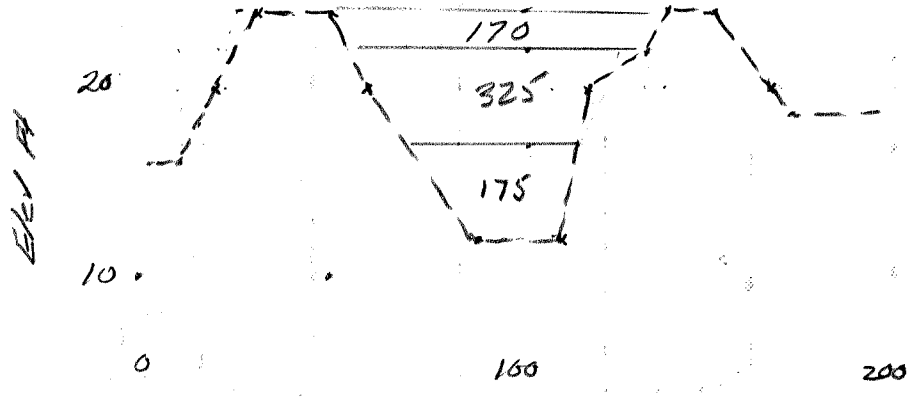




Coyote Cr. Reach Trimble Rd to Rf 237

Section at Rf 237



n = .033
S = .0003

Boundary Weir - Rf 237 L = 3500'

$Q = 3.1 L H^{3/2}$

depth	H	$H^{3/2}$	Q
0	0		
1	0		
2	1	1.0	10,800
3	2	2.83	30,700

Rec. Area = $19.5 \times 4 \times 10^6 = 78 \times 10^6$ SF

Outflow at Downstream Channel Section — Mannings Formula

Coyote Cr. Trimble Rd to Rt 237

ELEV.	DEPTH	AREA FT^2	WP = T + 2D	$R = \frac{A}{WP}$	$R^{2/3}$	"n"	S	$S^{1/2}$	$V = \frac{1.49}{n} R^{2/3} S^{1/2}$	Q cfs
12	0	—								
	5	175	55	3.2	2.16	.033	.0003	.017	1.6	300
	10	500	100	5.0	2.9				2.2	1100
	12	670	115	5.8	3.2				2.5	1700

Storage Volume — N Values

L = 12,800

Coyote Cr. Reach Trimble to Rt 237

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area × L ×10³	Volume CF-Min ×10³	V/Δt			REACH Outflow CFS	N = V/Δt + O/2		
	Section Upstream	Section Downstream				t = 5 min	t = 10 min	t = ~~20~~ 40 min ×10³		t = 5	t = 10	t = ~~20~~ 40 ×10³
0												
5	250	175	213	2726	45			1.1	.3			1.3
10	700	500	600	7680	128			3.2	1.1			3.8
12	910	670	790	10,112	169			4.2	1.7			5.0
13				10,100 / 78,050	1468			36.7	1.7			37.5
14				10,100 / 156,550	2768			69.2	12.5			75.4

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Coyote C. Trimble to Et 237

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1+I_2)$	N $N=\frac{V}{\Delta t}+\frac{O}{2}$	ΔN $\bar{I}-O$	OUTFLOW O cfs	DEPTH
0 to 160	0	1	0		0	
200	1	2	1	1	0	
240	3	6	3	2	2	12
280	8	10	7	4	2	12
320	12	18	15	8	2	12
360	23	22	31	16	2	12
400	20	18	51	20	5	13.2
440	17	15	64	13	9	13.7
480	13	13	70	6	11	13.9
520	13	12	73	3	12	14.0
560	11	9	73	0	12	14.0
600	8	8	70	-3	11	13.9
640	8	7	67	-3	10	13.8
680	6	4	64	-3	9	13.7
720	2	2	59	-5	8	
760			53	-6	6	

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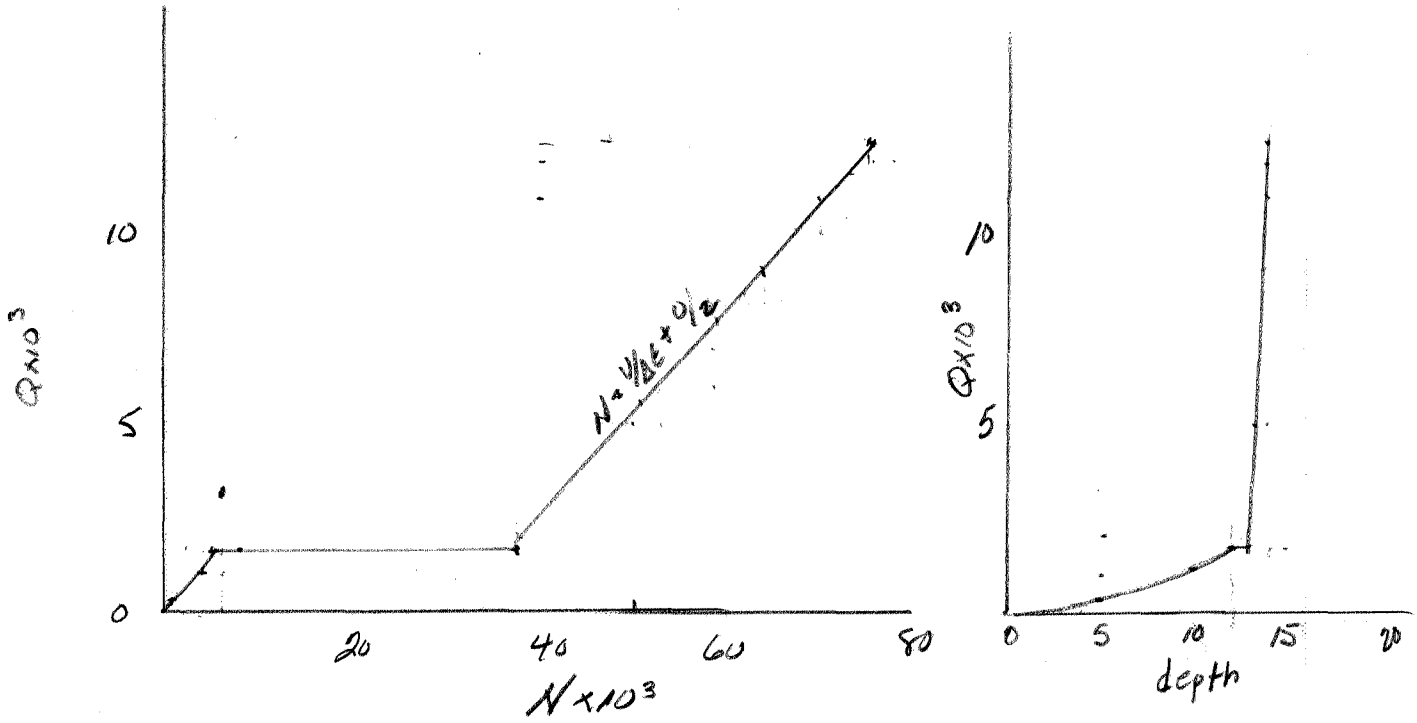
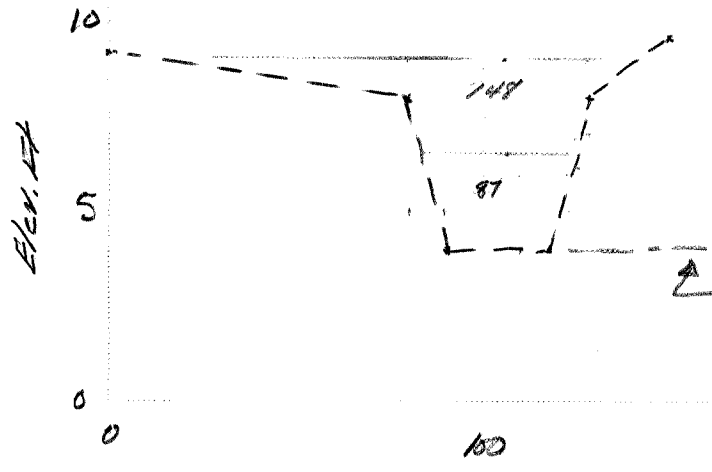


Coyote Cr. Rt 237 to Section Nr. Milpitas Disposal Plant

Section at Milpitas Disposal Plant.



Capacity

A = 235 S = .00025 $S^{1/2}$ = .016

R = 1.80 $R^{2/3}$ = 1.48

V = 1.07 Q = 250 cfs

Mean High Water El 4.0'

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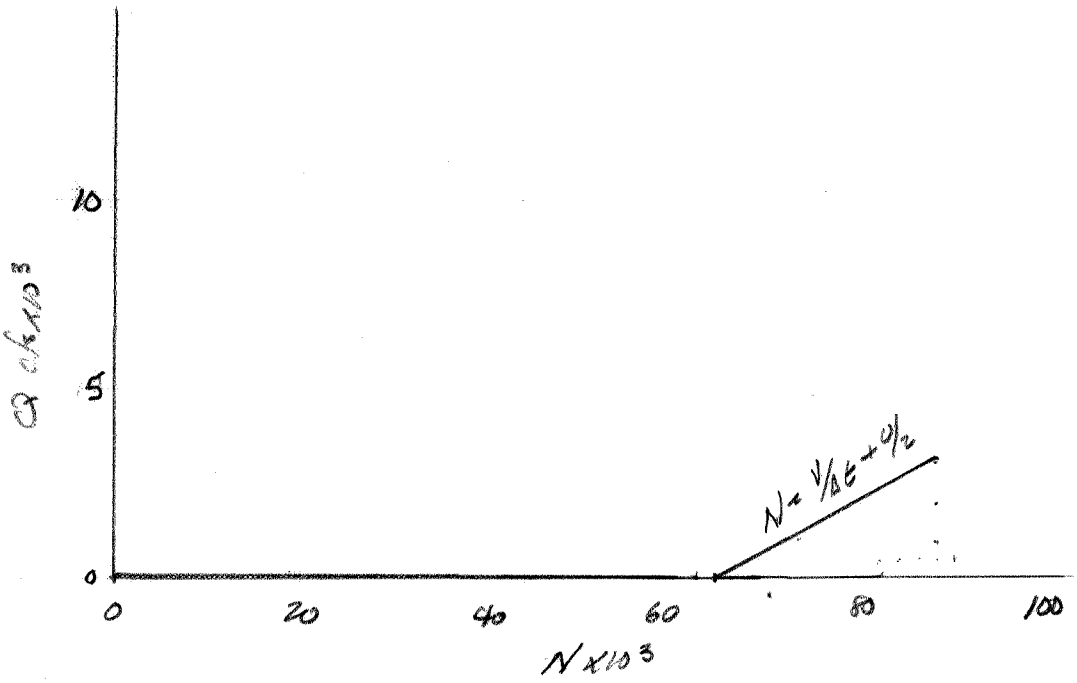
Subject Coyote - Anderson Dam Failure Job No. ____

Spill From Coyote Cr. - Spill over Rt 237 Nr. Alviso

Res Area & Volume.

depth	Area SF x 10⁶	Av. Area SF x 10⁶	Vol. CF x 10⁶
-1	0	4.6	4.6
0	9.2	30.0	150.0
5	50.8	52.8	52.8
6	54.8		



Levee Weir at Elev. 5.0. L = 1000

H	H^3/2	Q
1.0	1.0	3100

SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, San Jose, California

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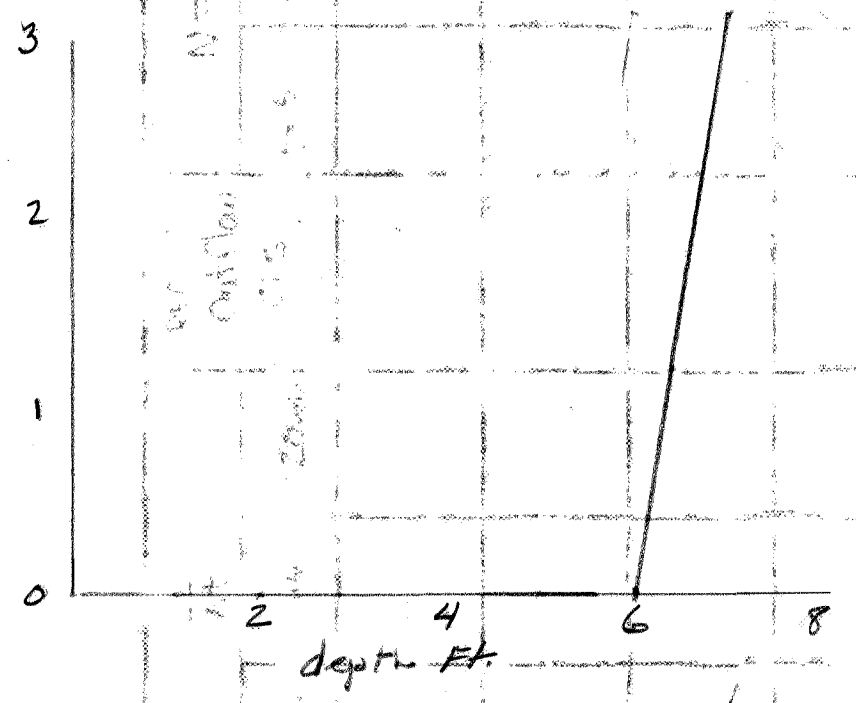

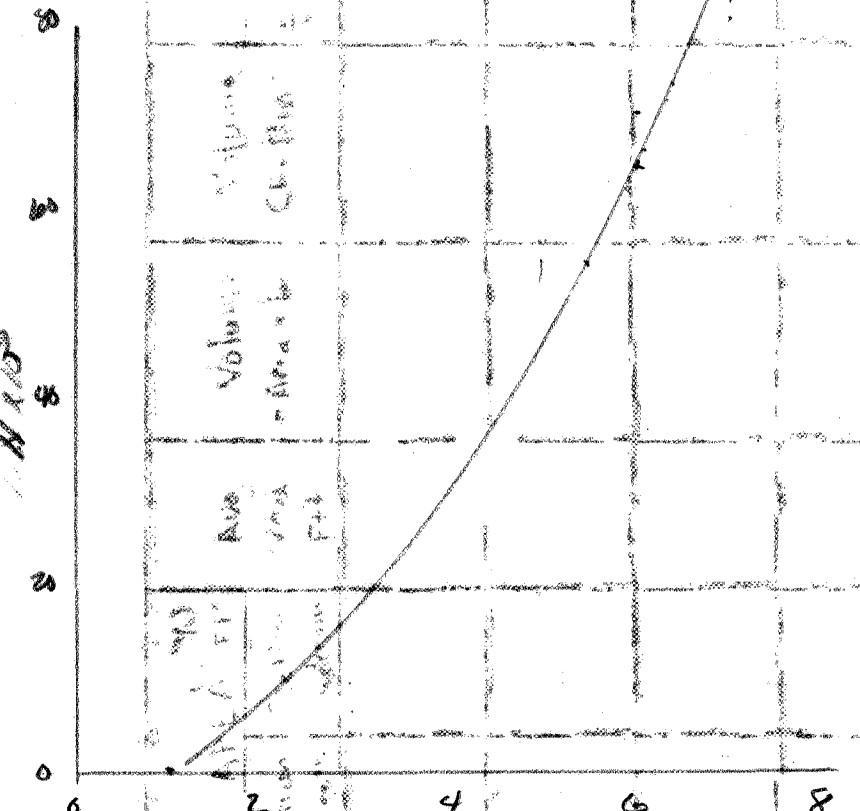

Storage Volume — N Values

Coyote Cr. Spill over Rt 237 nr. Alviso

DEPTH / ELEV	X-SECTION AREA Ft²		Avg Area Ft²	Volume = Area × h ×10³	Volume CF-Min ×10³	$\frac{V}{\Delta t}$			REACH Outflow CFS	$N = \frac{V}{\Delta t} + \frac{O}{2}$		
	Section Upstream	Section Downstream				t = 5min	t = 10min	t = ~~20~~ 40 min ×10³		t = 5	t = 10	t = 40 ×10³
-1.0												
0.5				4,600	7.7			.2	0			.2
45.0				154,600	2577			64.4	0			64.4
46.0				207,400	3457			86.4	3.1			88.0

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Coyote Cr. Spillover @ 237 for alluvial

TIME	INFLOW cfs	$\bar{I} = \frac{1}{2}(I_1 + I_2)$	N $N = \frac{V}{\Delta t} + O/2$	ΔN $\bar{I} - O$	OUTFLOW "O" cfs	DEPTH
0 to 360	0	2	0		0	
400	3	5	2	2	0	
440	7	8	7	5	0	
480	9	10	15	8	0	
520	10	10	25	10	0	
560	10	9	35	10	0	
600	9	8	44	9	0	
640	8	7	54	8	0	5.5
680	7	6	61	7	0	5.9
720	6	5	66	6	0	6.0
760	4	3	71	5	1	6.3
800	2	1	73	2	1	6.4
840	0	0	73	0	1	6.4
900			72	-1	1	6.4
940			71	-1	1	6.3

COYOTE & LAKE
SANTA CLARA VALLEY
SAN YSIDRO
(ORTEGA)
Llagas Creek
Tequisquite Slough
Santa Clara Valley
BOLSA
LOMERIAS MUERTAS

SAN JOSE
SANTA CLARA
SAN FRANCISQUITO
Alamitos
Coyote
Creek
Guadalupe
Willow Creek
Los Gatos
Saratoga
Permanente
Stevens
Calabazas
Monte Bello
Black Mtn.
Mt. Umunhum
Loma Prieta
Mt. Madonna
Mt. Sizer
Mt. Thayer
Mt. Chual
Mt. Day
Mt. Misery
Mt. Hamilton
Mt. Isabel
Mt. Boardman
Mt. Bache
Mt. Copernicus
Mt. Sanchez
Mt. Toro
Mt. Johnson
Mt. Bullis
Mt. Eden
Mt. Ogilvie
Mt. Sizer
Mt. Thayer
Mt. Chual
Mt. Day
Mt. Misery
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Mt. Eden
Mt. Ogilvie

ANDERSON LAKE
SANTA CLARA VALLEY
Coyote
Llagas
Creek
Valley
Shingle
Pleasant
Morgan Hill
Gilroy
Hollister
SOUTHERN PACIFIC
SANTA CLARA
VALLEY